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THE
BRITISH TORTRICES.

BY
S. J. WILKINSON.



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JOHN VAN VOORST, PATERNOSTER ROW.
1859.

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P R E F A C E.

A WORK on the British Tortrices, which should contain descriptions of the various species known to occur in these islands, and at the same time record our latest knowledge upon the subject, has long been desiderated, nothing of the kind having appeared upon this group of insects since the publication of the late J. F. Stephen's 'Illustrations of British Entomology.'

To supply this want was the object of a notice by Mr. H. T. Stainton, in the 'Entomologist's Annual' for 1855, Second Edition, and I undertook the task. How it has been accomplished it is not my province to pronounce; but I may, perhaps, be permitted to make a few remarks on the mode of its execution, promising, however, that I have no literary aspirations. I have merely endeavoured to make the subject-matter intelligible, and the following is the course I have adopted.

All the descriptions have been made from the insects themselves, without reference to what has been done by other authors; and the manner of writing them is uniform throughout. Whilst describing the anterior wings, I have, whenever practicable, taken the palest tint as the ground-colour, and then have noticed the separate markings, commencing at the base, and proceeding to the apex. I deem it right to mention this, that the tyro may not be at a loss, when, endeavouring to make out his species from the text, which has, with that object, been verbosely written, at the expense of what may be termed elegance of diction, conceiving the latter to be quite incompatible in a book on Natural History intended for study.

The anatomical part of the subject has been carefully and microscopically investigated, and the few characters which have presented themselves have been made available for the purposes

of classification, but the result is not by any means so satisfactory as I could have desired; in fact, the structure of the palpi and the venation of the wings offer but few marked variations for characteristic distinctions. The principal features as regards the palpi exist in *Sarrothripa* and *Phtheochroa* (see Pl. III. figs. 1 & 7); and with respect to the structure of the anterior wings, the *costal fold* deserves especial notice (see figs. 4 & 7 of Plate I.); for, although this character has long since been observed, it has never before been used in classification. It will be seen that my second family (the *Plicatæ*) is founded upon it; and by it, at all events, *one insect* has been removed from former systems to its *more natural* location—I mean *Xanthosetia inopiana*, which has hitherto been associated by Stephens and Doubleday* with *X. hamana* and *Zoegana*, with what reason does not appear; but is now removed to the *Halonotæ*, following *H. turbidana*, which it certainly resembles both superficially and structurally. I could multiply instances, but this one is sufficient for my purpose.

The illustrations of the venation of the wings in Plates III. & IV. vary somewhat from those given by previous authors; for the reason of this I refer the reader to the Explanations of the Diagrams at the top of Plate III. As this is peculiarly interesting to me individually, I invite the observations of others on this branch of the subject, as I think it may lead ultimately to some important physiological results.

In consequence of structure being the basis of the present arrangement, great alterations have necessarily been made. These alterations I have the presumption to dignify with the name of improvements, because I deem them as effecting a nearer approach to the true 'Systema Naturæ' than any hitherto published. Doubtless many persons will differ from me in this particular; but I can only say that I look forward for a better system from abler hands, and if my labours should lead in any way to such a result, I shall consider them amply repaid. In the present work there are probably many errors, both of omis-

* In the second edition of Mr. Doubleday's List I see *inopiana* is now placed in his genus *Cochylis*; a position, which, if structure is to be considered, cannot be maintained.

sion and commission, and I shall be grateful to those who will kindly point them out to me for ulterior correction.

At the outset of my labours I had proposed that there should have been a greater portion of them devoted to the descriptions of the Larvæ and Pupæ, and with this object I sought all the information I could, that bore on these points, both orally and by correspondence ; and, although I found many facts were known, they were scattered over the country, and in most instances unrecorded, and so dependent upon memory and hearsay, that I considered them too crude and unauthentic to be made use of scientifically. I preferred, therefore, to be entirely silent whenever I was in doubt. The few Larvæ and Pupæ which *are* described have either been in my own possession, or the descriptions are taken from recent reliable drawings. It was in consequence of the vague and unsatisfactory state of our knowledge in these respects, that I planned my Diary (see the 'Entomologist's Weekly Intelligencer,' No. 117, p. 101), which I have found of great service, and am happy to say is being adopted by others ; so that, by the close of the present year, I hope to hear that much recorded information on the subject has been gained, and I shall be *most thankful* to any Entomologist who will send me any communications relative to the Larvæ or Pupæ of the *Tortricina*, or more particularly the Larvæ or Pupæ themselves. This announcement I make, more especially to my Northern Brethren of the Net ; and I will endeavour to make a suitable return.

One class of my readers, I expect, will feel disappointment at the omission of synonymy ; and a few words upon this point are necessary, as I believe it is generally considered that a work upon Natural History, with scientific pretensions, should not be without it. As regards the Nomenclature, I have followed the law of priority, by attaching to each insect the specific name assigned to it by the original describer, so far as he can be ascertained ; and the names I have used will, for the most part, be found to correspond with the Museum Catalogue ; and I refer those parties to it who may be inclined for an interesting turmoil in the intricacies of synonymy, where they will find in-

structing and ample materials upon which to try, if they do not exhaust their patience and perseverance. It is not, from these remarks, to be inferred that I have eluded this part of the subject; far from it, I have given it a fair share of my attention: but I candidly confess I saw no useful result to be derived from going over the same labour again which has been so ably and satisfactorily done both by the late J. F. Stephens and Mr. H. Doubleday; and as the Nomenclature is now put into a satisfactory condition by the efforts of those two gentlemen, I am, for one, quite willing to let it rest where they have left it; for I question the utility of bringing forward the "Babel perplexity" into every succeeding work on the subject. This, however, leads me to remark, that the "great alterations" alluded to above, have necessarily driven me to find generic appellations for those insects which have been separated from their hitherto reputed congeners; and in every instance, except in *Calosetia*, in the family Lozoperidæ, I have revived previously-used, but obsolete names, in preference to making new ones.

I have already mentioned the names of Doubleday and Stephens, and the most important works which have been published during the last ten years are from their pens. I will, therefore, contrast them with my own. The first, the 'Synonymic List of British Lepidoptera,' by Mr. H. Doubleday, was published in 1849 (the second edition has just appeared). The second is the Museum Catalogue 'Part X. Lepidoptera continued,' by J. F. Stephens, published in 1852; and this latter I have taken as my text-book.

	Species.
In the Museum Catalogue there are mentioned	310
Additions in the present volume	16
	<hr/>
Making	326
Deduct species or varieties enumerated as such, in the Museum Catalogue, but not included in this work	28
	<hr/>
Leaves the number described, inclusive of <i>Lozotania piceana</i> (see p. 9)	298

Making a similar comparison with Mr. Henry Doubleday's list, the figures stand as under :—

	Species.
Enumerated in said list, after excluding the families <i>Cimbidæ</i> and <i>Pyraloidæ</i> , and the genus <i>Tortricodes</i> , there are	294
Add for species described in this volume, but not inserted in Mr. Doubleday's list	9
Making together	303
Deduct for species in Mr. Doubleday's list, but not mentioned in this book	5
Result as above	298

By this it will be seen, that, numerically, Mr. Doubleday's and my species approximate very closely. The nine species added to his number are :—1, *Antithesia similana*; 2, *Lozotænia latiorana*; 3, *Lithographia cinerana*; 4, *Catoptria fulvana*; 5, *Peronea Lipsiana* (a doubtful species); 6, *Peronea comparana*; 7, *Cnephasia pascuana*; 8, *Argyrolepis sub-Baumanniana*; and 9, *Eupæcilia Vectisana*. The omitted species are :—1, *Antithesia Grevillana*; 2, *Halonota costipunctana*; 3, *Dicrorampha senecetana*; 4, *Cnephasia Colquhounana*; and 5, *Sericoris herbana*.

I cannot conclude without tendering my most sincere and heartfelt thanks to ALL those gentlemen who have so liberally and unhesitatingly assisted me with information, loans of books and specimens; some of these latter of great rarity. My obligations in these respects are so very numerous, that I will not attempt to mention each individually; but as I feel that especial thanks are due to Messrs. Allis, Bedell, Bond, Boyd, Chapman of Glasgow, Dalman, Doubleday, Douglas, Edleston, Hogan, Machin, Newnham, Nicholls, Parfitt, Edwin Shepherd, Stainton, H. Tompkins, Vaughan, J. J. Weir, and T. Wilkinson of Scarborough, they are acknowledged accordingly.

S. J. WILKINSON.

EXPLANATION OF THE CONTRACTIONS USED IN
THIS WORK.

Bent.	.....	Bentley.
Curt., Curt. B. E.	.....	Curtis's British Entomology.
Don.	.....	Donovan.
Doub.	.....	Doubleday.
Doug.	.....	Douglas.
Dup.	.....	Duponchel.
Ent. Ann.	.....	Entomologist's Annual.
Fab., Fabr.	.....	Fabricius, J. C.
Fischer, Fisch. v. R.	....	Fischer von Röslerstamm.
Fröl.	.....	Frölich.
Guen.	.....	Guenée.
Haw.	.....	Haworth.
H. Schæf.	.....	Herrich Schæffer.
Hüb.	.....	Hübner.
Kühlw.	.....	Kühlwein.
Lin., Linn.	.....	Linné (Linnæus).
Ratz.	.....	Ratzeburg.
Schiff.	.....	Schifferrmyller (and Denis).
Sta.	.....	Stainton.
Step., Steph.	.....	Stephens.
Tisch.	.....	Tischer.
Treit., Treits.	.....	Treitschke.
Wood's Ind. Ent.	.....	Wood's "Index Entomologicus."
Zool.	.....	"Zoologist."
Zell.	.....	Zeller.

THE BRITISH TORTRICES.

CLASS INSECTA.

Division HAUSTELLATA.

ORDER LEPIDOPTERA, LINN.

Section *Heterocera*, Boisduval.

(GROUP 6.) TORTRICINA, STA.

THE insects which form the subject of the following pages are comprised in the sixth* group (TORTRICINA) of the section *Heterocera*, and are numerous distributed throughout Europe, and perhaps the whole world. At present, however, it would appear that Europe is their metropolis, as specimens of this family, sent home in promiscuous collections of Lepidoptera from all parts of the world, are considerably fewer in number than those of other groups. It cannot be argued that this arises from their small size, as the TINEINA, a group usually much more diminutive, reach us well represented.

There are about five hundred known and described European species in cabinets, and of these nearly three hundred are indigenous to Great Britain and Ireland, or about one-seventh of our entire known Lepidopterous fauna, and doubtless we have many more yet to be discovered. Considering the smallness of the area in which our number of species occurs, and comparing it with the whole of Europe, it would appear that we are favoured with a greater portion of this group, as is the case also in the

* *Vide* Insecta Britannica, vol. iii. pp. 2 and 6.

Tineina, than our continental neighbours. There are, perhaps, several causes tending to explain this disparity : for instance, our isolated position ; the absence of hedges in many parts of the Continent, which in England afford food and shelter to very many species ; and the tract, perhaps, more generally and evenly hunted—although, in this last respect, very much yet remains to be done.

Is this disparity in numbers real, or only imaginary ? Comparing these islands with the whole of Europe, the assumption certainly holds good ; but it is very questionable whether it would continue to do so, if the Continent were divided into areas of equal extent with our own, and the latter contrasted with any one of those areas—the difference might then not prove so striking.

In the perfect or imago state, these insects present no great variety of habit to the observer ; their flight is never of long duration, nor is their love of locomotion great, as they appear merely to hover over and around the plants and trees which nourished their larvæ, and which again will form the nidus for their future progeny. Their time of flight is chiefly confined to the morning and evening, although there is no interval between, in which some of the species are not to be seen on the wing—few fly during the night.

They are in general numerous, especially certain species of the genera *Tortrix*, *Lozotania*, *Pæcilochroma*, *Cnephasia*, *Sericoris*, and some others, which are to be met with, in the middle of summer, wherever trees and herbage grow. They are to be seen from March to November, but appear in May, June and July in the greatest numbers.

Their life in the imago state is of short duration, lasting only a few days, in which are performed those duties necessary for the continuance and conservation of the species. The eggs are deposited, and the parents die.

Of the ova, or egg-state of these creatures, very little is known. This branch of the subject is open to much interesting inquiry, and, when gone into, must necessarily throw considerable light on their natural history.

The ova, so far as is ascertained, though defined in shape, are usually void of sculpture and that symmetry of form observable in the eggs of most of the other families in this Order. In general they are flat, and laid in small masses, arranged and overlapping each other, like the scales on fishes (*Anticlea trimaculana*) ; in others they are somewhat oval, but very wrinkled and flattened on their under surface, arising, most probably,

from subsidence, in consequence of their soft condition at the period of extrusion (*Grapholitha Ulicetana*). They are sometimes laid in stringy masses, as in *Sphaleroptera ictericana*.

The time required for the production of the larvæ after the ova are deposited is unknown; it doubtless is very varied, and probably many which are laid in the height of summer remain unhatched till the following spring, as must be the case with *Tortrix*, *Lozotania*, and their congeners. On the other hand, some must hatch almost immediately,—for instance the typical species of the genus *Endopisa*, as the larvæ are found in our table-peas very shortly after the appearance of the perfect insects.

The larva state is that in which these insects perform their most important offices in the economy of Nature, by checking a too redundant vegetable growth, forming the food of birds, &c. In fact, we look upon it as debateable ground, whether the larvæ of *Carpocapsa pomonella*, which spoil so many of our apples and pears, and *C. funebrana* our plums, are not, while destroying some of the fruit, actually improving the quality and condition of the remains of the crop; for it is scarcely reasonable to suppose that, if every apple, pear, or plum were to be matured, the whole would be either of such size or flavour as when they have undergone the natural process of *thinning* by these larvæ. By these remarks it is not intended to argue that the propagation of such larvæ is to be encouraged, but to show that they are not, as very many suppose, entirely noxious.

Most of the larvæ are leaf-eaters, and are to be found in April, May and June in great abundance; the modes they adopt in forming shelter for themselves, by twisting and distorting the leaves and young twigs of trees, plants, &c., are so very numerous and varied, that they can scarcely have failed to attract the attention of the most unobservant. They are naked, or very sparingly sprinkled with hairs, which are not always present; never found gregariously; and, although in their young state many of them are miners, none are case-bearers.

Such as do not feed on leaves, burrow into the bark, stems, roots, fruits, or seeds of their respective food-plants,—*Halonota*, *Dicrorampha*, *Ephippiphora*, *Carpocapsa*, &c.; but these, as a rule, are never so numerous as the leaf-eating kinds.

The folding, twisting, or distorting the leaves and twigs is accomplished by means of an elastic silk, spun by the larvæ, usually of a white colour, which hardens and contracts on exposure to the air, and thus draws opposite portions of the leaves towards each other. A series of spinnings and contractions effects the end in view. The operation is therefore twofold:

first, the act of the larva itself ; secondly, the force exercised by the contraction of the silk : there is otherwise no accounting for the extraordinary folding and bending of stubborn leaves, obviously beyond the unassisted strength of the minute larvæ.

The duration of life in the larva state varies considerably, according to the species,—those which are internal feeders being usually longest in coming to maturity. The reason for this is evident. For such as feed on leaves it is requisite they should be full-grown before the fall, whilst those living internally are urged by no such necessity ; and many of these latter may be found in the winter and early spring months, if not actually feeding, still in the larva state.

The larvæ themselves, at least of those most commonly met with, are so similar to each other, as to render their discrimination difficult, if not altogether impossible, without the most careful attention. They are mostly of plain and uniform colours ; and besides the roundish elevated spots (which are equally characteristic of the *Tineina* larvæ), they are deficient in markings, to enable the student to distinguish them ; nevertheless, they are very interesting, but must be studied before we can expect to become acquainted with their habits ; and we would urge on those who have the time to observe them, to note down carefully every fact that comes before them, relative to these insects in their larva state ; for until we are much better acquainted with the preparatory states than at present, we must not hope to see a natural grouping of the species.

The pupa state, like that of the larva, also varies in duration : in some species a few days are sufficient to develop the imago, in others it requires months ; but we have not sufficient data on which to base any sound or general conclusions.

GENERAL CHARACTERS.

IMAGO.

Head tufted with hairy scales above ; the tufts inserted over the eyes, and meeting in a ridge on the vertex.

Eyes always compound, large, semiglobose.

Ocelli frequently (always ?) present, inserted over the eyes, but partly concealed by the tufts on the head.

Palpi always three-jointed ; middle joint longest (except in *Sarrothripa*, where it is of the same length as the apical) ; apical joint *never* recurved upwards.

Maxillæ usually not longer than the palpi (in *Sarrothripa* thrice as long) ; when at rest, wound up convolutely at the base of those organs.

Antennæ almost invariably simple (in *Amphisa* pectinated, in *Ditula*

subserrate and plumose), stoutest and pubescent beneath in the ♂. Never so long as the anterior wings.

Thorax usually stout, globose or ovate; sometimes with a crest (simple or bifid) behind.

Patagia two—never longer than the thorax, covering the bases of the anterior wings.

Wings four. The anterior pair varying in length and breadth, of obovate or elongate triangular shape; frequently truncate at the apex, ornamented with markings of various colours, usually dull, but sometimes with metallic lustred spots and streaks. The discoidal cell always obtuse at the apex, never? attaining to three-fourths the length of the anterior wing, and usually lying more towards the upper half than in the middle. The posterior pair always shorter than the anterior, but frequently much wider; always of sombre colours, and without markings; folded in repose. Cilia ample.

Legs formed for walking: the first, or anterior pair, simple and shortest; the second, or intermediate pair, with two unequal moveable spines at the apex of the tibia; the third, or posterior pair, with the tibia armed with *two pairs* of unequal moveable spines, one pair situate beyond the middle, the other at the apex of the tibia. These spines are directed downwards, and inserted on the under or inner surface.

Tarsi five-jointed, terminated by two minute claws.

Abdomen moderately stout in both sexes, but usually more robust in the ♀; generally with a caudal tuft in the ♂.

PUPA obtected, robust; enclosed in a cocoon or web spun by the larva (never exposed, suspended or girt). The abdominal segments armed with transverse rows of minute spines (except *Sarothripa*); caudal extremity frequently armed with spines, hooks, or tentacula.

LARVA always? with 16 feet, 6 pectoral, 8 abdominal, and 2 anal (sometimes these organs are only rudimentary). Head and shield horny, and frequently with a horny plate on the anal segment above.

OVA usually scale-like.

The colouring of the British *Tortricina* is very varied, and although generally of tints which may be designated sombre, these insects are certainly equal in beauty to any found upon the Continent, and scarcely less gay than most of the few we are acquainted with from extra-European localities. The markings, however, are extremely simple; being, as in some of the other families in this Order, a modification of an almost universal type throughout. These consist of a basal patch, a central fascia, a spot or mark upon the costa towards the apex, and an ocellated patch at the anal angle, with one or two others of minor importance:

in the modification of any or all of these, does the variation we witness in these insects consist, except perhaps among the *Peroneidæ*, where the colouring and direction of the markings in one or two of the species assume quite a different aspect. Short oblique streaks upon the costa are of very frequent occurrence, which are for the most part geminated, or arranged in pairs. These streaks are frequently produced or continued to the middle of the wing, and often to the opposite or dorsal margin.

The type of marking is simplest and most perfect in the fasciated species of the genus *Tortrix* (*heparana*, *Ribeana*, *cinnamomeana*), and least so in the genera *Capua*, *Bactra*, some of the *Peroneæ*, *Retinia*, *Endopisa*, and *Phtheochroa*.

Of the above-mentioned marks, the central fascia is the most conspicuous, and generally present; next to this, the basal patch, then the subapical costal spot, and lastly, the ocelloid patch; the remainder do not require especial notice.

The central fascia originates about the middle of the costa, and is, independent of its colouring, varied in direction and shape. In *direction* it is straight, or proceeding at right angles with the margins of the wing, as in some species of the genus *Euchromia*: it is curved, as in *Cnephasia hybridana* ♀: it is oblique; and the obliquity is twofold: in the first place, it commences on the costa and proceeds to the anal angle; secondly, it lies more or less parallel with the apical margin. Instances of the former occur, amongst others, in the genera *Tortrix* and *Lozotania*, and of the latter, only in the family *Lozoperidæ**. In quantity it is entire, interrupted, or abbreviated: entire in *Tortrix*; interrupted, as in *Brachytania Hartmanniana*, *Argyrolepia Baumanniana* and its congeners; and abbreviated, as in *Brachytania semifasciana*, and in most of the *Eupaciliæ*. It possesses, besides, other characters; such as being isometric, constricted, dilated, angulated, &c.; but as it frequently happens that two or more of these are present in the same species, it is not proposed, here, to do more than allude to them.

Sometimes a second fascia is visible, and when so, it is always a prolongation of the subapical costal spot. *Ctenetra Pilleriana* ♀ has this mark distinctly present.

The basal patch is scarcely less Protean than the central fascia, but is more frequently absent altogether. In some instances it is solid, *i. e.* composed of one colour only; in others,

* In the genera *Argyrolepia* and *Eupacilia* the central fascia in many species is expressed only on and towards the dorsal margin; in such cases it may be considered as *originating* THEREON, and as *proceeding* TOWARDS the costa.

open, or streaked and mottled : it is abbreviated, or not reaching the dorsal margin, or the costa, as the case may be : its posterior edge is straight, rounded or hollowed ; or it reaches further along the costal than on the dorsal margin, and *vice versâ*.

The ocelloid patch is a roundish mark at the anal angle, usually of a light ground-colour, enclosing several black spots or longitudinal lines. It is subject to great variation both in size and colour, and not unfrequently edged or bordered with streaks or markings of a metallic lustre. It is smallest in some species of the genera *Catoptria* (*Scopoliana*, *Hohenwarthiana*) and *Grapholitha* (*Ulicetana*, *Hypericana*) ; largest in *Spilonota*, *Steganoptycha*, and *Carpocapsa*. It is most indistinct in *Dicro-rampa*, *Endopisa*, and some of the *Ephippiphoræ* ; in the two former genera it is merely indicated by the usually enclosed black dots being present, and in the latter it is nearly obliterated, owing to the very dark ground-colour of the anterior wings.

The British species of this group are classed under nine families, which may be distinguished as follows :—

FAMILY I. **TORTRICIDÆ,**

having the costa for the most part regularly arcuated (it is obtusely so towards the base in some genera only). The *basal patch*, *central fascia* and *subapical costal spot* usually well expressed (examples of abbreviation and interruption do occur). *Ocelloid patch wanting*, save a slight indication thereof in some species of the genus *Antithesia*.

FAMILY II. **PLICATÆ,**

having the *costa in the ♂ invariably folded at the base*, in the ♀ regularly arcuated. In some genera the basal patch and central fascia are present and well defined, in others they are wholly wanting. The same remarks apply to the ocelloid patch.

FAMILY III. **ANCHYLOPERIDÆ.**

The costa is regularly arcuated in both sexes. Most of the genera are distinguished by the *produced apex of the anterior wings*. The basal patch is chiefly more developed than the central fascia. The ocelloid patch *not always present*.

FAMILY IV. **PERONEIDÆ.**

The costa is *always obtusely arched towards the base*, and the species are *chiefly distinguished by tufts of elevated scales on the anterior wings*, and by the *slightly incised or emarginated costa*. (In *Teras* it is much incised.) The basal patch almost wholly wanting. The central fascia, when present, is abbreviated, or represented only by a triangular mark on the costa. *The ocelloid patch never present.*

FAMILY V. **STIGMONOTIDÆ.**

The costa always regularly arcuated. The basal patch and central fascia frequently well developed; but, from the dark colours of the wings of many species, and from the markings being confluent, are often obliterated or undiscernible. The ocelloid patch *not always present*. The chief characteristic mark of this family is *the pale, various-coloured blotch upon the dorsal margin*; this, however, occurs also among the *Plicatæ*, but *there* it is always accompanied by the folded costa in the ♂.

FAMILY VI. **CARPOCAPSIDÆ.**

The costa is sometimes nearly straight, at others regularly arcuated. In one genus the basal patch and central fascia are wanting, and the ocelloid patch represented only by marginal dots (*Endopisa*): in the remainder the basal patch is ill developed, the central fascia wanting; the ocelloid patch is *either large or small, but well defined*, and sometimes adorned with metallic lusted streaks.

FAMILY VII. **CNEPHASIDÆ.**

The costa of the ♂ LESS rounded than in the ♀. Ground-colours of the anterior wings mostly white or grey. The basal patch is, here, frequently modified into an abbreviated curved fascia near the base. The central fascia much angulated, not always entire. The subapical costal spot frequently produced. *Ocelloid patch always wanting.*

FAMILY VIII. **SERICORIDÆ.**

The costa always regularly arcuated, and equally so in both sexes. The basal patch usually distinct and sharply defined. The central fascia, in direction, nearly straight, and frequently biangulated on its posterior edge. *Ocelloid patch wanting.*

FAMILY I. **TORTRICIDÆ.**

The genera comprised in this division are twelve in number, of which the larvæ feed almost entirely in folded, rolled, or united leaves, and chiefly assume the pupa state in a loosely-spun cocoon or web (except *Sarrothripa*) of silk.

In the imago, the anterior wings are ample, their length seldom exceeding twice the width; and in several genera, particularly in *Tortrix*, with the costa considerably dilated towards the base, *but never folded*. The posterior wings are ample, ovate, and slightly concave or emarginate below the apex.

The twelve genera are thus tabulated:—

- | | |
|---|-----------------|
| A. Anterior wings with the costa <i>roughly clothed</i> with scales at the <i>base</i> and <i>apex</i> , and <i>slightly incised</i> in the <i>middle</i> . | |
| a. Palpi with the apical joint <i>very long</i> . | |
| a a. With the <i>middle joint</i> as long as the apical | 1. SARROTHRIPA. |
| B. Anterior wings with the costa <i>rounded</i> at the <i>base</i> , or regularly arcuated, and <i>without</i> the <i>rough scales</i> at the <i>base</i> and <i>apex</i> . | |
| b. With the antennæ <i>pectinated</i> in both sexes, <i>mostly</i> so in the ♂. | |
| c. Palpi having the middle joint <i>five times</i> as long as the apical | 2. AMPHISA. |
| b b. With the antennæ <i>setaceous</i> , <i>subserrate</i> and <i>plumose</i> . | |
| c c. Palpi having the middle joint <i>four times</i> as long as the apical | 3. HYPERMECTIA. |
| b b b. With the antennæ <i>setaceous</i> , and <i>only hirsute beneath</i> in the ♂, and <i>simple</i> , or <i>nearly so</i> , in the ♀. | |
| c c c. Palpi with the <i>middle joint twice</i> as long as the apical. | |
| d. With the <i>apical joint twice the length</i> of the basal | 10. CENECTRA. |
| d d. With the <i>apical joint half the length</i> of the basal | 8. SIDEREA. |
| c c c c. Palpi with the <i>middle joint three times</i> as long as the apical | 9. DICHELIA. |
| c c c c c. Palpi with the <i>middle joint more than three times</i> as long as the apical . } | 11. CLEPSIS. |
| c c c c c c. Palpi with the <i>middle joint four times</i> as long as the apical. | 12. TORTRIX. |
| e. With the apical joint <i>not so long</i> as the basal } | 4. EULIA. |
| | 6. ANTITHESIA. |

- e e.* With the apical joint *as long* as the
 basal 5. BRACHYTÆNIA.
c c c c c c c. Palpi with the *middle joint*
six times as long as the apical 7. PENTHINA.
-

Genus I. SARROTHRIPA, GUENÉE.

Head tufted above and between the eyes. Antennæ setaceous, inserted on the crown towards the front. Eyes large, subglobose. Palpi much longer than the head, appressed, porrected upwards; basal joint shortest and curved; the middle twice the length of the basal, curving upwards; apical joint horizontal, straight, cylindrical, as long as the middle. Maxillæ thrice the length of the palpi. Thorax ovate, with a simple tuft behind. Anterior wings elongate, length equal to twice the breadth; costa abruptly arched and ciliated at the shoulder and towards the apex; apex obtuse; apical margin subtruncate, oblique, rounded; dorsal margin slightly rounded. The costal vein reaches the costa beyond the middle; the six apical nervures all simple; the submedian nervure inserted in the middle of the median vein. Posterior wings ample, apex obtuse, apical margin concave. Legs: middle pair longest; first pair with brushes of hairs situated on the inner portion of the femur and tibia. Abdomen slender in the ♂, moderate in the ♀.

This genus is placed at the head of the *Tortricina* in consequence of its affinity to *Hylophila* and *Earias*, which are now separated into a distinct family. It approaches those genera by having the pupa unarmed with transverse rows of minute spines in the dorsal region of the abdominal segments, and by being enclosed in a tough, closely-spun silken cocoon, somewhat like an inverted boat. The appearance of the perfect insect, however, offers no resemblance to them, but is of the true *Tortrix* character, much resembling *Peronea*: from this latter genus it differs in the *absence* of tufts of elevated scales; for, although the small dark spots on the surface of the wings have the appearance of being raised, it proceeds from an optical illusion, owing to the spots themselves being of a dull velvety character upon a shining surface.

The structure of the palpi is abnormal, the terminal joint being as long as the middle one, and nearly as stout,—in both respects differing widely from what usually obtains in this family. The great length of the maxillæ, too, is very remarkable; but in the neuration of the wings there is no departure from the typical form.

There is now but one recognized British species, although formerly it was considered there were several, in consequence of the great variation to which it is liable.

1. *revayana*, Schiff. Alis anticis nitidis canis aut griseis (aliquando brunneis); puncta ferruginea in medio, punctisque atris obscuris, sparsis; posticis griseis. ♂ Exp. al. 11–12 lin.

Head drab. Face drab, paler below. Eyes dark umber. Palpi more than twice the length of the head; above and at sides fuscous, beneath pale drab. Antennæ brown. Collar drab, with a streak of umber near the apex. Thorax and patagia drab, the former with the crest slightly darker. Anterior wings glossy, drab, with the central region darker, generally with a reddish appearance towards the costa, and black or umber spots disposed over the surface; these spots are without gloss, giving them the appearance of being raised. The central darker portion commences anteriorly on the costa, one-third from the base, and proceeds direct to the dorsal margin, with a clearly-defined wavy line. On the costa it extends one-fourth the entire length; its posterior edge very wavy, and dilating considerably before the middle, but contracting before it attains the dorsal margin; anteriorly and posteriorly is a line, following the course of the borders of the central portion; both suffuse upon the costa, especially the posterior one. In the dilated portion of the central region is a brown or black liturated spot. Before the central region towards the base are two other similar spots. In the apical portion of the wing is a sharply-angulated or zigzag line, followed by three spots towards the anal angle, all black or dusky. On the apical margin is a row of black lunules. Apical scales and cilia drab. Posterior wings at base grey, merging into fuscous at the margins. Marginal scales and cilia pale drab. Abdomen glossy, grey. ♀ Exp. al. 11–12½ lin.

A somewhat rare species in this country, and extremely variable, the ground-colour of the anterior wings ranging from hoary-grey to olive-drab, and to umbreous-brown with the spots and markings darker; but the character of these latter is constant throughout, so that no doubt can be left of there being but one species.

The imago appears from July to December, but more commonly in the autumn, and occasionally they may be met with (probably hibernated specimens) in the spring. It has been captured at the New Forest, Combe, Darent, and Birch Woods, Black Park, Mickleham Downs, in Norfolk, &c.

The pupa and larva appear to be unknown in this country; but, according to Hübner, the former is bright green, with a broad longitudinal brown stripe from the head to the edge of the second abdominal segment; the latter is also bright green,

slightly hairy, and with the segments edged transversely with yellow.

The cocoon is whitish, boat-shaped, resembling the cocoon of *Earias clorana*, but is longer.

Genus II. AMPHISA, CURTIS.

Antennæ strongly pectinated and pilose in the ♂, faintly so in the ♀, inserted on the crown of the head over the eyes. Palpi much longer than the head, approximating, porrected horizontally, thickly clothed with scales; basal joint minute, drooping; middle horizontal, robust, especially towards its apex, five times as long as the apical; apical slender, cylindrical, as long as the basal, slightly depending. Maxillæ short. Thorax slender, ovate. Anterior wings elongate-triangular in the ♂, lanceolate in the ♀. In the ♂ the costa is obtusely arched at the base, less so in the ♀; the apex slightly produced; apical margin oblique, slightly concave; dorsal margin rounded. The discoidal cell reaches rather beyond the middle of the wing; the three subcostal nervures nearly equidistant; the apical vein gives out five nervures, of which the first is furcate, one branch reaching the margin above, the other below the apex. Posterior wings: apex obtuse, with the apical margin scarcely concave. Abdomen slender, tufted in the ♂.

This genus was established by Mr. Curtis, and may be distinguished by the antennæ, which are pectinated in both sexes, a character which does not occur elsewhere in the family, so far as is at present known. The palpi offer no peculiarities in their structure, being of the normal form, and the maxillæ do not exceed those organs in length. In Curtis's 'British Entomology,' pl. 209, the neuriation of the anterior wing is figured, in which the discoidal cell is represented as being open at the apex; but, upon a careful investigation of this part of the subject, we have not met with this peculiarity throughout the family.

There are two British species, which may be thus distinguished:—

- A. Anterior wings with the ground-colour sulphur-yellow Species 1
 B. Anterior wings with the ground-colour grey . . . Species 2

1. *Gerningiana*, Schiff. Alis anticis ochraceo-flavis; subreticulatis (aliquando sine reticulatione); fascia media obliqua maculaque postica costali brunneo-fuscescentibus; posticis violaceo-griseis.
 ♂ Exp. al. $6\frac{1}{2}$ –8 lin.

Head and face castaneous brown, dull. Eyes black, dull. Palpi

castaneous brown above and beneath, paler at sides. Antennæ with the basal joint and stem above, at base, castaneous brown, merging into brownish drab or whitish at the apex, the pectinations black; beneath, wholly black; sometimes the basal joint and stem above, wholly drab or whitish. Thorax and patagia castaneous brown; the latter somewhat paler at the apex. Anterior wings dull sulphur-yellow at the base, which is clouded with rich brown, and a grey irroration on the dorsal margin. At the middle of the costa commences a broad, dark brown, oblique, nearly isometric fascia; straight, sharply-defined, and reddish on its anterior edge, but suffusing posteriorly: the subapical costal patch is of similar colour; along its anterior border runs a streak, which is continued to the apical margin near the anal angle, and the space at the apex enclosed by it is more or less suffused with pinkish brown; the interval between the posterior edge of the central fascia and the said streak is yellowish towards the costa, but clouded with pinkish brown. The apical half of the wing is reticulate, the basal streaked transversely; extreme margin intense brown or black. Apical scales shining, dull pinkish brown, sometimes mottled with black. Cilia ferruginous, in some lights rosy; pale or whitish at the anal angle, and iron-grey beyond. Posterior wings very pale grey, clothed with coarse fuscous scales. Marginal scales fuscous, with pale bases. Cilia very pale straw-colour. Abdomen deep fuscous; the caudal tuft pale ferruginous. ♀ Exp. al. 6-6½ lin. Anterior wings marked like the ♂, but much narrower and more acute at the apex.

A northern species, varying in the intensity of the ground-colour of the wings and of the markings.

The imago appears from June to August among *Calluna vulgaris*, sometimes in great profusion; the males flying at sunset, but the females are rarely met with on the wing. It occurs on most heaths and moors in the north of England, and also in Scotland.

The larva, according to Herr Zeller, feeds, on the Continent, upon *Vaccinium uliginosum*.

2. **prodromana**, Hübner. Alis anticis canis aut griseis; basi macula nebulosa, fascia media triangulari (in qua litura oblonga grisea) brunneis; posticis cinereo-fuscis. ♂ Exp. al. 8 lin.

Head black, with a few deep ferruginous scales on vertex. Face obscure ferruginous. Eyes and palpi black. Antennæ: stem brown at base, the remainder whitish; the pectinations rusty black; wholly black beneath. Thorax deep rich ferruginous brown. Patagia paler. Anterior wings very pale grey, inclining to white, with rich ferruginous markings. The base, on the dorsal margin and nearly to the costa, is occupied by a roundish patch. Before the middle of the costa commences a broad fascia, attaining the dorsal margin on its anterior

edge, which is nearly straight, dilating on its posterior edge, and, instead of attaining the dorsal margin, curves upwards and returns to the costa parallel with its original course; between this recurved mark and the apex on the costa is a greyish patch mixed with ferruginous, and a curved mark of the latter, enclosing an apical spot. The pale portions of the wing irrorated with grey and ferruginous. Apical scales smoky grey, tipped with whitish. Cilia smoky grey at apex, the tips whitish towards the anal angle. Posterior wings shining, pale grey, clothed with coarse fuscous scales. Marginal scales fuscous, with pale bases. Cilia grey at apex, with pale tips; altogether paler at the anal angle. Abdomen smoky black; the caudal tuft luteous, or slightly ferruginous. ♀ Exp. al. 6-6½ lin. The markings of the anterior wings are the same as in the ♂, but darker in colour and more distinct. The posterior wings are whitish at the apex, and speckled with grey or cinereous. Marginal scales pale fuscous. Cilia cream-colour. Abdomen umber, with the segments fringed with silvery hairs.

Rather a scarce species, being confined to the north of England and Scotland. It was originally taken by Mr. Walker near New Lanark in 1827, since when it has been occasionally met with by other collectors; in 1857 it occurred somewhat plentifully at the Brushes near Manchester.

The ♂ is in most collections, but the ♀ is still very rare; she seldom flies, and must be sought for in the bushes.

Genus III. HYPERMECIA, GUENÉE.

Antennæ slender, stoutest in the ♂, and pubescent beneath. Palpi longer than the head, approximate, densely clothed with rough scales; basal joint short and robust; middle stout, four times as long as the apical; apical minute, slender and exposed, as long as the basal. Maxillæ much longer than the palpi. Thorax moderately stout, ovate. Anterior wings elongate-triangular; costa slightly arcuated; apex obtuse; apical margin subtruncate, slightly concave; dorsal margin straight. Posterior wings with the apical margin concave and the anal angle somewhat produced. Abdomen stout, acute in the ♂, obtuse in the ♀, not tufted.

In general appearance this genus somewhat resembles the preceding, and is therefore placed in close proximity to it. In structure it varies considerably; for instance, the antennæ are simple, the formation of the palpi different, and in the venation of the anterior wings there are six simple apical nervures, whilst in *Amphisa* there are only five.

There is but one species of this genus, and no others appear to be known on the Continent.

1. *Augustana*, Hübner. Alis anticis cinereis aut pallide ochraceis, basi fuscis; pone medium rufis, castaneis aut ferrugineis, puncto triangulari ad costam ochraceo vel cinereo; posticis fuliginosis basi dilutioribus. ♂ Exp. al. 6-6½ lin.

Head drab. Face drab, paler below. Eyes brown. Palpi as long as the head, very pale drab, except at the apex, which is smoky black. Antennæ dark grey. Thorax and patagia dusky drab, the latter paler at the tips. Anterior wings dull drab; at the base, on the dorsal margin, is a roundish dusky patch, followed by an oblique isometric fascia of the ground-colour of the wing. Beyond this, the apical portion is occupied by a brick-red patch enclosing a triangular space on the costa; this latter is maculated with white and dusky, and streaked with lustrous silvery scales, especially at the inner edges. There are also some silvery streaks on the brick-red patch towards the apical margin and the anal angle. The wings often with an irroration more or less of dusky atoms. Apical scales without gloss, dull brick-red, slightly paler at the base. Cilia slightly glossy; at the apex dusky ferruginous; then straw-colour, tinged with ferruginous to the middle of the margin; afterwards, dusky ferruginous to beyond the anal angle, where they become iron-grey. Posterior wings rich fuscous, darkest at the apex. Marginal scales fuscous, with tawny bases. Cilia pale grey, frequently white, and sometimes with a fuscous tinge at the apex. Abdomen glossy, fuscous; the caudal tuft drab. ♀ Exp. al. 6½-7 lin. In colour somewhat brighter than the ♂, but the silvery markings nearly obsolete.

This is rather a common species; it varies a little in size, and considerably in colour, especially the ground-colour, which ranges from pale to dark drab, and the markings from fuscous and ferruginous to deep brick-red. In some specimens the base is wholly pale, constituting the var. *a.* of Haworth and the *viminana* of Guenée.

The imago appears in June and July, among Sallows and Willows, and is generally distributed throughout the south of England, Combe, Darent, and Birch Woods, Cheshunt, Broxbourne, Ripley, Monkswood, Black Park, near Gloucester, &c. It occurs also in Scotland.

The pupa is long, amber-coloured, and enclosed in an earthen cocoon, spun together with silk.

The larva spins together the leaves of the Willow and Sallow, feeding thereon, and also in the catkins, and is full-grown in May. It is pale yellow in colour. Head black and shining; shield pale brown, darker in front, its anterior margin white; spots scarcely darker than the body.

Genus IV. *EULIA*, HÜBNER.

Head broad. Antennæ slender, clothed with scales above, pubescent beneath. Palpi rather longer than the head, approximating, ascending, densely clothed with short scales; basal joint short, thick, slightly curved, truncate; apical minute, ovate, shorter than the basal; middle four times as long as the apical, curved, stout, thickest beyond the middle. Maxillæ short. Thorax stout, subglobose, with a large elevated tuft behind. Anterior wings twice as long as broad; costa regularly arcuated; dorsal margin rounded slightly; apex acute; apical margin oblique and nearly straight. The costal vein reaches to the middle of the costa, and the submedian nervure is inserted nearly opposite the middle subcostal one. The discoidal cell reaches to the middle of the wing; in shape elongate-triangular, broadest before its apex. Posterior wings: apex obtuse; apical margin slightly concave.

There is but one British species, which is of difficult location. By some (Guenée, Doubleday, &c.) it is placed in the genus *Lozotania* (*Tortrix*), but the general appearance of the insect scarcely warrants that position. It is erected into a distinct genus in Stephens's Mus. Cat., under the name *Eulia*, as assigned to it by Hübner, which is retained until a better knowledge of the larva and preparatory states dictate its proper place. The structure of the palpi and venation of the wings are the same as obtain in the genus *Tortrix* as here restricted, and *there*, after all, may be its proper place. In repose the perfect insect holds the wings in a deflexed position, but somewhat rounded at the sides.

1. *ministrana*, Linn. Alis anticis nitidis, ochraceis; basi a medio maculis nebulosis et margine apicali ferrugineis; pone medium gutta alba; posticis fuscis. ♂ Exp. al. 9-10 lin.

Head and face dusky ferruginous. Eyes black. Palpi dull drab, slightly dusky at sides. Antennæ fuscous. Thorax pale ferruginous in front, ochreous on vertex; the tuft pale ferruginous. Patagia pale ferruginous at base, the apex pale ochreous. Anterior wings: glossy, pale bright ochreous, with pale ferruginous clouds; at the base the costa is pale ferruginous, with a dusky irroration; a broad pale ferruginous cloud proceeds two-thirds the length of the wing along the dorsal margin, extending upwards nearly to the costa; at the apex is a broad, somewhat triangular cloud of a rich ferruginous red colour; the space between this and the basal cloud is ochreous; an irroration of iron-grey scales, more or less distinct, is in the middle of the wing, extending from the costa to the dorsal margin. At the apex of the discoidal cell is a whitish irregular-shaped spot. Apical scales and cilia pale ferruginous, both becoming pale ochreous, or yellow mixed with iron-grey, at the anal angle. Posterior wings

clothed with coarse fuscous scales on a white ground. Marginal scales fuscous, with paler bases. Cilia whitish, sometimes pale grey. Abdomen dark fuscous, the tuft dull straw-colour. ♀ Exp. al. 10-11 lin.

This beautiful species is tolerably abundant and constant in its general appearance. The Scotch specimens are mostly much darker than the southern ones, constituting the var. *E. subfasciana*. *E. ferruginea* is an extension of the same variety, but darker and more evenly coloured.

The imago is somewhat plentiful round London and in the south of England, especially near Dover. It is taken also in the north of England, in Scotland, and at Newtonlimavady, co. Derry, in Ireland. Its flight is sluggish, and it may be taken on the wing at dusk.

The larva is green, and is supposed to live through the winter. It has been bred by Mr. Harding (*vide* Entom. Weekly Intell. vol. i. p. 62); and, from the perfect insect being mostly taken among Hazel, may not that be its food-plant?

Genus V. BRACHYTÆNIA, STEPHENS, MSS.

Antennæ clothed above with scales, pubescent beneath. Palpi longer than the head; the apical joint conspicuous and exposed, minute, oval, densely clothed with short scales; middle joint four times the length of the apical, curved, very stout, thickening from before the middle, clothed beneath with long scales; basal joint short and stout. Maxillæ as long as the palpi. Thorax stout, tufted behind. Anterior wings scarcely twice as long as broad; costa regularly arcuated; apex obtuse; apical margin slightly subtruncate; dorsal margin concave. Posterior wings ample, ovoid; apical margin concave. Abdomen slender, tufted in both sexes.

This genus was instituted by the late J. F. Stephens to separate the two species included in it from the *Antithesia*, to which they are so closely allied as scarcely to be separable from them. The venation of the wings in the two genera is identical; but there are minor structural differences, and the wings are much less deflexed in repose than in the latter genus. The abbreviated or interrupted central fascia readily distinguishes them from the true *Antithesia*.

The species above alluded to may be arranged thus:—

- A. With the central fascia *abruptly abbreviated* . . . Species 1
- B. With the central fascia *attaining* the dorsal margin,
but *interrupted* in the middle Species 2

1. *semifasciana*, Haw. Alis anticis griseis; nebulis saturatoribus; maculis duabus costalibus (basi una, altera pone medium) fuscis nigro-punctatis; posticis griseo-fuscis, margine saturatoribus. ♂ Exp. al. 8–9 lin.

Head fuscous, darker behind antennæ. Face fuscous. Eyes black. Palpi above, at sides, and beneath, hoary; between paler. Antennæ fuscous. Thorax pale fuscous, streaked transversely with dull brown. Patagia fuscous at base, somewhat hoary in the middle, and paler at the apex. Anterior wings dull, ashy grey, palest at the apex, with numerous pale fuscous, undulating, transverse, interrupted streaks, most distinct on the costal and dorsal margins. Near the base of the costa is a short, pale, dull fuscous fascia margined with darker brown; in the middle of the costa is a large, irregular, somewhat quadrate fuscous patch, bordered and dotted with dark brown, and having the inner edge broadly and sharply black. In the middle of the subapical portion of the wing are several obscure brown spots placed on the nervures of the wing. Apical scales deep fuscous, with the apices and bases pale grey. Cilia pale fuscous. Posterior wings shining, fuscous, deepest at apex. Marginal scales fuscous, with luteous bases. Cilia grey, with a fuscous tinge. Abdomen pale fuscous grey. ♀ Exp. al. $9\frac{1}{2}$ –10 lin.

This species is far from common, but in some places it is occasionally taken in plenty. It does not vary.

The imago appears from June to August about Sallows and Willows. It occurs in Kent and Hampshire, at Wandsworth, formerly in Battersea Fields, and in many places round London.

The larva feeds on various species of Sallows and Willows, in the young shoots and in the catkins.

2. *Hartmanniana*, Linn. Alis albidis, subnebulosis; fasciis duabus interruptis fusco-nigris, una ad basin, altera pone medium, obliqua, in qua linea atra; posticis griseis. ♂ Exp. al. 8–9 lin.

Head and face pale rusty brown, the latter somewhat paler below. Eyes black. Palpi above, at sides, and at apex, beneath, dark hoary grey; the bases beneath and between drab. Antennæ fuscous. Thorax pale fuscous, streaked transversely with dusky brown; the bifid tuft dull brown. Patagia coloured like the thorax. Anterior wings dull, pale drab; the costa widely alternated with pale brown; near the base is an interrupted curved fascia of umber colour and black. The central fascia is umber-coloured, mottled with black, and interrupted longitudinally in the middle; it is widest on the costa, and on attaining the dorsal margin curves inwardly, running along it to the base, thus enclosing, in conjunction with the basal fascia, an oblong-ovate space on the median fold, marked with three dots. In the apical region are some curved streaks, the darkest bearing one or two black spots. Marginal scales umber, with the bases and apices

pale drab. Cilia drab, mottled with umber-coloured scales. Posterior wings shining, clothed with coarse fuscous scales on a light-grey ground; marginal scales fuscous, with luteous bases. Cilia white. Abdomen and caudal tuft fuscous. ♀ Exp. al. 8-9 lin. In colours and markings resembles the ♂.

An uncommon insect, and does not vary. It is very like a pale-coloured *Antithesia corticana*, but may be distinguished from it by the ground-colour of the anterior wings, which is pale drab, instead of white, and by the interrupted medial fascia, which in the latter insect is entire.

The imago makes its appearance in August; and latterly it has been taken near Lea Bridge, from the trunks of Willows. Stephens, in his 'Illustrations, Haust.,' vol. iv. p. 86, says it is "not common; taken occasionally within the metropolitan district in July; also in Devonshire." It has been bred by Mr. Thomas Boyd, from pupæ found by him, spun up between Willow-leaves.

Genus VI. ANTITHESIA, STEPHENS.

Antennæ setaceous, inserted in front over the eyes, clothed with scales above, pubescent beneath. Palpi longer than the head; basal joint short, stout; apical oval, minute, not so long as the basal, clothed with short scales; middle four times as long as the apical, stout, thickening from before the middle, and clothed beneath with long scales. Maxillæ longer than the palpi. Thorax stout, ovate, with a bifid tuft behind. Anterior wings: length more than twice the breadth; costa regularly arcuated; apex obtuse; apical and dorsal margins rounded. The discoidal cell extends beyond the middle of the wing, and the subcostal vein gives out an internal nervure, inserted between the first and second subcostal nervures, which crosses to the apical vein between the first and second apical nervures. Posterior wings ovate; apical margin concave below the apex. Abdomen in the ♂ slender, and tufted at the apex; stout in the ♀, and not tufted.

The insects associated in this genus form a very natural group, the larvæ for the most part feeding upon the leaves of various shrubs and trees; some of them (*A. Gentianana* and *marginana*) are internal feeders, and a more intimate knowledge of the preparatory states of the family may hereafter warrant the erection of a separate genus for the reception of the latter. In repose the wings are very much deflexed.

The British species are fourteen in number, as tabulated below, and some others are known on the Continent.

- A. With the *basal cloud* on the anterior wings *extending on the costa to, or slightly beyond, the middle* . Species 1-8
- B. With the basal cloud *extending beyond the middle* of the costa.
 - a. With the *base of the posterior wings of the ♂* *white* Species 9, 10
 - b. With the *base of the posterior wings of the ♂* *not white* Species 11-13
- C. With the anterior wings *entirely dark-coloured* . Species 14

1. **corticana**, Hüb. Alis anticis niveis; basi nigro plumbeoque variegatis; fascia media nigra, atro-punctata; posticis fuscis. ♂ Exp. al. 9-10 lin.

Head fuscous mixed with grey. Face same colours, but slightly darker. Eyes black. Palpi above, at apex, at sides, and between, dull fuscous; at the base beneath and between, pale drab. Antennæ pale fuscous, darker beneath. Thorax dull umber, alternately streaked transversely with dull grey. Patagia coloured like the thorax. Anterior wings dull, snow-white; the costa broadly maculated with black patches mixed with white scales. Near the base is an interrupted curved fascia; at the middle of the costa commences a very broad irregularly angulated fascia, extending to the dorsal margin, composed of mottled fuscous, umber and black markings; a conspicuous longitudinal black mark runs through it, above the middle; this fascia is produced inwardly, and joins the basal patch at its interruption, thus enclosing a white space on the costa; *outwardly its edge is projected into three nodes, with a deep incision*, level with the longitudinal black streak before named; a broad fuscous and umber-coloured cloud extends from the base to the central fascia, leaving a white space above. The upper edge of the dorsal cloud towards the base is marked with a strong longitudinal black line. The apical region white, marked with curved streaks, composed of black and white scales, more or less intense, but most distinct at the apical margin and apex; on one of these streaks, in the middle, are several black dots; sometimes the apex is faintly reticulated. Apical scales deep fuscous, with white tips. Cilia grey mixed with iron-grey, and with a fuscous tinge, both becoming white at, and grey beyond, the anal angle. Posterior wings fuscous. Marginal scales fuscous, with luteous bases. Cilia pale grey, with a fuscous tinge. Abdomen and caudal tuft pale fuscous grey. ♀ Exp. al. 9-10 lin.

Rather an uncommon species, and does not vary: it is, in appearance, like *Brachytenia Hartmanniana*, but is distinguished from it by the ground-colour of the anterior wings being white instead of pale drab, and by the uninterrupted fascia beyond the middle. The white patches at the base of the

anterior wings at once separate it from the other species of this genus: some pale instances, however, of *A. Betuletana* might be mistaken for it; but the posterior margin of the basal cloud in the latter species is undulate in a straight direction, or nearly so, whilst in *A. corticana* it is concave as well as undulate.

The imago appears from June to August among birch-trees. It occurs at Coombe, Birch, Darenth, Dulwich, West Wickham, and Plumstead Woods, Epping Forest, in Worcestershire, Cheshire, and at Torwood in Stirlingshire, N. B.

The larva most probably feeds on the Birch (*Betula alba*), as the perfect insect is always taken where such trees grow.

2. *Betuletana*, Haw. Alis anticis niveis, aliquando ochraceis; basi pone medium nigro, fusco, ochraceo plumbeoque variegatis; apice cinereo-strigato; posticis fuscis. ♂ Exp. al. 9-10 lin.

Head dull dark brown, pale over eyes. Face same colour as the head. Eyes black. Palpi at the tips, above, between, at sides, and beneath, dull dusky brown, merging into whitish at the base. Antennæ dark brown, the basal joint clothed with black scales. Thorax dark brown, alternated with transverse bands of hoary grey; sometimes these bands have a ferruginous tinge; the bifid tuft deep ferruginous. Patagia same colours as the thorax. Anterior wings shining snow-white at the apex, with dull, curved, grey streaks, most intense along the apical margin, and usually without black dots. The dark portion of the wing extends two-thirds along the costa, and near to the anal angle, on the dorsal margin; it is beautifully mottled with iron-grey, fuscous-black and white markings, in which may be traced a basal patch much interrupted and broken; the central fascia is distinctly visible, chiefly of fuscous with black markings bordered with white; the space between the central and basal fascia filled up with iron-grey; the costa streaked throughout with grey. On the white part of the wing, near the middle of the central fascia, is frequently a delicate ochreous cloud. Apical scales with white bases and tips, iron-grey in the middle. Cilia pale grey at the apex, darker before, and white at the anal angle. Posterior wings fuscous. Marginal scales fuscous, with luteous bases. Cilia shining, very pale straw-colour. Abdomen pale fuscous, the caudal tuft drab. ♀ Exp. al. 9-10½ lin.

A very common insect, and varies considerably in the intensity of the colours in the anterior wings. In some instances the base is pale, thus approaching *A. corticana*; in others the usually white tips are ochreous, which colour also pervades the whole wing. In this latter form it resembles *A. ochroleucana*. The typical insect is very like *A. Capraeana* and *A. praelongana*: from the former it is distinguished by the straightly undulated

edge of the basal cloud, and the absence of a small cluster of blackish dots in the subapical region; and from the latter, by its generally larger size, broader wings, and the absence of the mottled and fuscous apex.

The imago appears from June to August throughout the metropolitan district; in Devonshire, the New Forest, near Dover, and in other parts of the country; in Scotland; also at Holywood, co. Down, in Ireland.

The larva feeds on the White Birch (*Betula alba*), and is full-fed about the end of May.

3. *Capræana*, Hüb. Alis anticis niveis; basi pone medium nigro, fusco plumbeoque variegatis; apice strigis cinereis punctisque atris in lineis longitudinalibus dispositis; posticis griseo-fuscis.
♂ Exp. al. 8-9 lin.

Head pale brown, inclining to drab, palest close to the eyes. Face dark brown below, paler above. Eyes black. Palpi fuscous above and at sides, between and beneath whitish. Antennæ pale fuscous. Thorax fuscous, streaked transversely with darker brown, the crest deep ferruginous or castaneous brown. Patagia coloured like the thorax. Anterior wings dull, clouded from base to two-thirds the length of the costa, and to near the anal angle on the dorsal margin, with black, umber, fuscous and whitish markings, beautifully mottled; the apex snow-white, somewhat glossy, with dull grey curved streaks; at the base is a rounded and very angulated patch; the central fascia darker, angulated on both edges, *having a curved incision of white posteriorly*; the space between this fascia and the basal patch is suffused with fuscous, except towards the costa, where is a white space thickly marked with the costal streaks; in the centre of the white apical space are several black spots and longitudinal short streaks of the same colour. Apical scales with white bases and tips, deep fuscous in the middle. Cilia shining drab, mottled with iron-grey; both becoming white at the anal angle. Posterior wings pale grey, clothed with coarse fuscous scales, deepest at the apex. Marginal scales fuscous, with straw-coloured bases. Cilia pale straw-colour. Abdomen pale fuscous, the caudal tuft paler. ♀ Exp. al. 9-10 lin. Colouring somewhat darker than in the ♂.

This beautiful species is comparatively rare, and does not vary. It has much the appearance of *A. Betuletana*, but is easily distinguishable from it by the darker streaks on the tip of the wing, a cluster of blackish dots in the subapical portion, and, lastly, by the concave and sinuated posterior margin of the basal cloud.

The imago is rarely taken at large, most of the specimens in our cabinets being bred. It is comparatively new to our fauna, the first record of it being by Mr. J. J. Weir, who bred it in

1849, and informs us that this species will come to light,—a peculiarity not noticed with others of the genus, except *A. ochroleucana*. It has been captured at Swanscombe Wood, and appears to be confined to the south of England.

The larva is of a beautiful bright green colour, and spins together the topmost shoots of *Salix Capræa*; it is to be met with in May at West Wickham Wood, and also at Epping Forest.

4. *prælongana*, Guen. Alis anticis niveis; basi pone medium albo, fusco, brunneo, nigro cæruleoque variegatis; macula alba quadrata margine costali ante medium; apice fusco strigato, maculis atris oblongis longitudinalibus; posticis griseo-fuscis. ♂ Exp. al. 8-8½ lin.

Head: on vertex smoky black, behind with the scales tipped with grey, ochreous brown over the eyes. Face smoky black, mixed with grey scales below the antennæ. Eyes black, slightly shining. Palpi: above dusky brown at apex, mixed with whitish scales towards the base; at the sides the base is white; the apex dusky brown mixed with white; beneath white. Antennæ dark brown, the lower portion of the basal joint clothed with blackish scales, its apex white. Thorax hoary or dark brown, streaked transversely with black; the crest black, or intense brown. Patagia variegated with black, brown, and hoary scales. Anterior wings snow-white, with a dull dark cloud at base extending halfway along the costa, and very near the anal angle on the dorsal margin; *the upper half of its posterior edge nearly straight, the remainder bulging outwards into one or two nodes*; the basal patch is angulated in the middle, as also is the interior edge of the central fascia; they are both mottled with fuscous and iron-grey, and streaked longitudinally with strong black lines, the darker ones finely edged with white or pale ochreous; the space between the fascia and the basal patch is coloured in the same manner, except at the costa, where it is white (sometimes closely streaked with fuscous and grey), and one or two small white roundish spots with fuscous centres towards the dorsal margin. At the apex, sometimes extending to the anal angle, is a fuscous cloud sprinkled with white, with two broad streaks within, one fuscous, the innermost grey; both maculated with black. The costa broadly streaked throughout with black and grey. Apical scales dark brown, tipped with pale ochreous. Cilia shining, smoky black, both becoming white at the anal angle. Posterior wings fuscous, darkest at the margin. Marginal scales fuscous, with luteous bases. Cilia white, except at the apex, where they are fuscous. Abdomen fuscous and shining grey, the caudal tuft dull drab. ♀ Exp. al. 10 lin. In colour darker than the ♂, and more distinct.

This is an uncommon and most beautiful species, subject to some variation in the intensity of the markings composing the

basal cloud. In many specimens patches of white are present, which give the insect much the appearance of *A. corticana*; but its smaller size, the narrow or elongated anterior wings, and the clouded apex at once distinguish it.

The beautiful figure of Curtis (Brit. Ent. No. 567 ♂), under the name of *Penthina Grevillana*, well represents a dark instance of this species. Mr. Stainton describes this insect in the 'Zoologist,' p. 1988. It is very rare on the Continent.

The imago appears in May and June among Birch-trees, and specimens have been captured by Mr. Douglas at West Wickham and Dulwich Woods; also at the former locality by Mr. Waring. Our own specimens were taken, from the beginning of May to the middle of June, at West Wickham Wood. According to Mr. Stainton, this is a commoner insect in the north of England and in Scotland.

The larva in all probability feeds upon the Birch, but this is mere conjecture.

5. *ochroleucana*, Hüb. Alis anticis pallidis ochraceis; basi pone medium nubilis maculisque brunneis variegatis; apice strigulis punctisque costalibus fuscis; posticis fusco-griseis. ♂ Exp. al. 9-10 lin.

Head and face dusky drab-brown. Eyes black. Palpi dull brown, dark drab below, at sides and beneath. Antennæ fuscous. Thorax dull brown, streaked transversely with dusky drab, the crest castaneous. Patagia dull brown at the base, the apical half dusky drab. Anterior wings dull, pale ochreous, the dark portion extending rather more than half along the costa, and to near the anal angle on the dorsal margin; *its apical edge irregular and convex*; its colour dark dull brown mixed with darker shades, and bearing here and there small patches of a slightly lustrous pale violet hue; the interval between the basal patch and the central fascia is indicated by a pale space on the costa, and another irregular and undefined one near the dorsal margin and about the fold; in some cases there is a dark brown spot surrounded by a pale ochreous margin, and near it are other irregular markings of the same colours. The costa is broadly streaked throughout with brown. The apical portion of the wing is more or less distinctly marked with the same colour, and with one or two dots near the dark cloud, and others smaller, nearer the apex; the apical margin brown. Apical scales dark brown, with pale ochreous bases. Cilia straw-colour; both becoming paler at the anal angle. Posterior wings clothed with coarse fuscous scales on a pale grey ground. Marginal scales pale fuscous, with luteous bases. Cilia grey, with a fuscous tinge. ♀ Exp. al. 9½-10 lin. Abdomen fuscous, the caudal tuft dull drab.

This species was first eliminated by Mr. Stainton, who noticed and described it in the 'Zoologist,' p. 1987. It is a common species in gardens, and is in most cabinets: very like the ochreous specimens of *A. Betuletana*, but distinguishable therefrom by the roundish posterior margin of the basal cloud, and the more umbreous and suffused colour of the cloud itself. Fig. 888 of pl. 30 of Wood's 'Index Entomologicus' represents this insect very much more truthfully than the species it purports to be (*A. Cynosbatella*), from which it is easily separated by the absence of the black dot in the middle of the posterior margin of the basal cloud, and by the absence of the ocelloid patch at the anal angle.

The imago appears from the middle of June to the beginning of July, in rose-gardens. Like *A. Capræana*, it comes to light. Not yet detected in Scotland, and only very sparingly in the north of England.

The larva feeds on the Rose, and is common in some places. M. Guenée says of it, "Larva rosetarum pestis," showing, at least, that on the Continent it is very abundant.

6. *Cynosbatella*, Linn. Alis anticis albis; basi pone medium albo, griseo, fusco, brunneo, nigro cæruleoque variegatis; in parte alba medio, juxta marginem obscurum maculis duabus oblongis brunneis; posticis fusciscentibus. ♂ Exp. al. 7-10 lin.

Head dusky brown, with a few grey scales. Face same colour as the head, but somewhat paler below. Eyes black, slightly shining. Palpi: above, at apex dusky brown; drab at base, at sides, beneath and between. Antennæ fuscous, the basal joint above clothed with dark brown scales, with its apex pale; beneath usually with pale drab shining scales. Thorax in front dull fuscous, spotted and festooned with black, hoary grey behind; the crest intense brown, sometimes black. Patagia fuscous grey, striped with black towards the base. Anterior wings dirty white. The costal and dorsal margins maculated throughout with black. The basal or clouded portion of the wing extends on the costa to the middle, and rather more than two-thirds along the dorsal margin; its posterior edge *undulated gently to the middle, then suddenly dilated into a sharp angle, and from thence attaining the dorsal margin in an almost perpendicular course.* The basal patch and central fascia are much angulated, and composed of rich golden brown, fuscous and black; the space between slightly paler, of a fuscous colour, and with an oblong-oval mark, white at each end, on the fold towards the dorsal margin. In the bay formed by the angle in the edge of the cloud are two black spots, the uppermost largest and oval; close to the dorsal margin are one or two smaller spots; the apical portion of the wing clouded with grey, with a distinct eye-like spot at the apex, and the margin sometimes with black lunules. Apical scales shining, dark

grey tipped with white. Cilia paler and mottled; both becoming nearly white at the anal angle. Posterior wings fuscous, paler at the base. Marginal scales fuscous, with luteous bases. Cilia pale straw-colour. Abdomen fuscous, the caudal tuft dull drab. ♀ Exp. al. 8–10 lin.

The most common of the British *Antithesiæ*, varying considerably in size, but tolerably constant as to colour. One variety is recorded as pertaining to this species—the *A. nubiferana* of Haw., which is very distinct, and all the specimens of it, that we have seen, are well represented in Wood's 'Index Entomologicus,' pl. 30. fig. 869. It is very rare, occurring in hedges near Darenth. Some other localities are named for it, among which are Willesden in Middlesex, and Brislington in Somersetshire. The anterior wings are dirty white, with indistinct and undefined dusky clouds from the base to beyond the middle; the costa is destitute of markings; at two-thirds from the base, and one-third from the dorsal margin, is a largish cloudy fuscous spot. Head, face, palpi, thorax and posterior wings as in the typical insect. Should not this be restored to the rank of a species?

The (typical) imago abounds in June among Whitethorn and Blackthorn hedges, and is generally distributed over the whole country. It occurs also in Scotland and Ireland.

The pupa is black, and measures 5 lines in length.

The larva is dingy olive-green, with a black head; the shield black, with anterior margin pale; a black patch on the anal segment, and black dots. It feeds on the Whitethorn, Blackthorn, Plum, Cherry, &c.

7. *Pruniana*, Hüb. Alis anticis albis; basi pone medium albo, cinereo, brunneo atroque variegatis; margine apicali fusco; maculis tribus distinctis fuscis costalibus; posticis fuscescentibus. ♂ Exp. al. $6\frac{1}{2}$ –8 lin.

Head fuscous, darkest in front. Face slightly paler. Eyes black. Palpi fuscous, paler beneath. Antennæ fuscous. Thorax fuscous before and behind, with a broad band of dull drab or grey across the vertex; the bifid crest rich castaneous. Patagia: basal half fuscous, the remainder dull drab or grey. Anterior wings dull, pale cream-colour, the dark portion extending along the costa to the middle, and rather more than two-thirds along the dorsal margin; its posterior edge usually undulated to beyond the centre, like the letter *f*, and then continued in a somewhat receding direction. The basal patch is very angulated, and made up of mottled markings and streaks of golden and darker brown, fuscous and iron-grey. The central fascia is distinct and curved, of golden brown, with darker shades placed longitudinally, fuscous and grey exteriorly;

the space between paler, assuming the appearance of two broadish streaks following the angulation of the fascia, and produced to the dorsal margin; pale at their origin; then dark grey and brown, speckled with cream-colour, particularly on the fold. The two spots on the edge of the basal cloud, as in *A. Cynosbatella*, are, in this species, *replaced by a rich oval golden-brown one, and scarcely separated from the fascia*. The apical portion of the wing is marked with three equidistant oblique marks on the costa (the apical one sometimes produced to the apical margin), with smaller ones between, and succeeded by an eye-like spot at the apex, all of a brown or dusky colour; in the middle are some golden-brown clouds, streaked with black, and mixed with patches of pale lustrous blue or leaden-coloured scales. Apical margin brown. Apical scales brown, with pale bases. Cilia same colour, but slightly paler and somewhat mottled; both becoming white at the anal angle. Posterior wings fuscous. Marginal scales shining, fuscous, with luteous bases. Cilia shining, pale straw-colour. Abdomen fuscous. ♀ Exp. al. 7-8 lin.

Also a very common insect; not variable, save as to intensity of colour. Allied to *A. Cynosbatella*, but much smaller, and further distinguished by the clouded apex of the anterior wings. In this latter character it resembles *A. Sauciana*; but the basal cloud of *Sauciana* extends two-thirds along the costa, whilst in this species it extends only to one-half. The variety *pullana*, as referred to this insect by J. F. Stephens, and figured in Wood's 'Index Entomologicus,' pl. 30. fig. 891, has the posterior edge of the basal cloud rounded towards the dorsal margin.

The imago appears from the middle of June to the beginning of July, and is generally distributed throughout the country. It occurs also in Scotland and in Ireland. The north of England and Scotch specimens are smaller and more intensely coloured than those captured in the south of England.

The larva is full-grown in May, and feeds on the Sloe (*Prunus spinosa*), Plum, Mountain Ash, Cherry, &c.

8. *dimidiana*, Treitschke. Alis anticis pallide roseis; basi medioque fasciis nigro, brunneo, fusco cinereoque variegatis; pone marginem posticum fasciæ mediæ puncto brunneo; posticis fuscis. ♂ Exp. al. 7-7½ lin.

Head smoky-brown. Face smoky-brown, approaching to black. Eyes black. Palpi intense brown, paler beneath. Antennæ dark brown, slightly paler beneath; the basal joint clothed with black scales. Thorax black or obscure brown, alternated with pink; the bifid tuft black. Patagia of same colours as the thorax. Anterior wings dull, pale rose-pink. The dark portion of the wing extends to the middle of the costa and four-fifths along the dorsal margin,

with its posterior edge gently undulated and produced outwardly towards the anal angle. The basal patch is distinct, angulated in the middle, proceeds rather farther on the dorsal margin than on the costa, and is composed of grey, fuscous, and rich and intense brown patches and streaks. The central fascia is chiefly of golden (sometimes subochreous) brown, with obscure markings, especially in the middle, and mixed with iron-grey patches exteriorly. The space between the basal patch and the fascia is broadly pink at the costa, followed by a cloud of iron-grey colour spotted with brown, terminating by another cloud of similar colours on the dorsal margin. There is a distinct *intense brown spot*, of variable shape and size in different specimens, *near the middle of the posterior edge of the central fascia*. From the apical margin originate several irregular long streaks, frequently curved, of a pale brown or subochreous tint. Apical scales pale brown, with pinkish bases. Cilia dark brown, mottled with a paler shade; the bases subochreous, and both becoming dusky pink at the anal angle. Posterior wings clothed with coarse fuscous scales on a whitish or straw-coloured ground. Marginal scales fuscous, with straw-coloured bases. Cilia pale straw-colour. Abdomen fuscous, the caudal tuft with an ochreous tinge. ♀ Exp. al. 7-7½ lin. Apex of the abdomen ochreous.

This pretty and distinct species varies in the intensity of its colouring, and is of the size of *A. Pruniana*. It was first captured by the late Richard Weaver, in Inverary, in 1844; and Mr. Stainton, who has since met with it in the glens of the Isle of Arran, thinks it frequents the Mountain Sallow.

This species seems confined to the north of England and to Scotland. It appears in June, frequenting the mosses and damp places on the hills.

The larva feeds on the Sweet Gale (*Myrica Gale*).

9. *marginana*, Haw. Alis anticis ochraceo-stramineis; basi pone medium ochraceo, cinereo, brunneo atroque variegatis; margine apicali fusco; in medio marginis fasciæ punctum, tribusque margine apicali atris; posticis *maris* basi albicantibus, apice fuscis; *fœminæ* fuscis, apice saturatoribus. ♂ Exp. al. 7-8 lin.

Head dark fuscous, paler behind. Face paler than the head. Eyes black. Palpi above fuscous, darkest at the apex, at sides paler; whitish beneath and between. Antennæ pale fuscous. Thorax brown. Patagia drab at base and apex, fuscous below the shoulder. Anterior wings dull, rich cream-colour; the basal cloud extends two-thirds along the costa and nearly to the anal angle on the dorsal margin. At the base is a pale brown patch, streaked with rich chocolate-brown. From the middle of the costa proceeds a broad, irregular, much-angulated fascia of rich brown colour, shaded with chocolate, umber and black; the space between this fascia and the

base is suffused with dark fuscous, leaving a pale mark at the costa, with others on the dorsal margin. The posterior edge of the basal patch and anterior border of the fascia are bounded by cream-coloured streaks. Within the anal angle is an elongated, speckled, black mark, and immediately above it is a small clouded black spot. The costa is broadly marked with triangular brown patches, three of which are beyond the central fascia, followed by the apical spot, of rich brown colour, which is produced down the apical margin; below the apical spot is a dusky cloud, sometimes black; the middle of the apical region is more or less mottled with black spots on a grey ground. Apical scales intense brown, with the bases and tips narrowly cream-colour. Cilia shining, rich brown, slightly mottled, and, with the apical scales, becoming cream-colour at the anal angle. Posterior wings white at the base, with a *pearly lustre*, gradually becoming fuscous to the margins; darkest at the apex. Marginal scales fuscous. Cilia pale fuscous grey at the apex, straw-colour at the anal angle. Abdomen fuscous, the caudal tuft shining drab. ♀ Exp. al. 7 lin. In colour and markings like the ♂, except that the posterior wings are wholly rich fuscous, slightly paler at the base.

A rare species, and not variable. In general appearance it approaches *A. Gentianana*, but is much smaller, and the light portions of the anterior wings paler. The pale-bordered posterior wings of the ♂ are an excellent character.

The imago appears in May and June, sparingly in the southern counties, as well as in the north of England. Stephens records Coombe and Darenth Woods as localities; at the latter, specimens were taken in July. Mr. Stainton, in the 'Zoologist,' p. 1791, states that he took one specimen in a clover-field at Pashley, near Ticehurst in Sussex, in September. By this range of season (May to September) it seems that this insect is continually appearing, or that there may be more than one brood in the year.

According to Guenée, the larva feeds on the pith of the Teazle (*Dipsacus*), frequently living and undergoing its transformations under a silken covering among the seeds. It is reddish white, with the head, shield and true legs black. In shape vermiform, and small in size.

10. *similana*, Wilkinson, MSS. Alis anticis pallide ochraceis; basi pone medium brunneo, fusco atroque variegatis; fascia in medio saturatiore; apice brunneo strigato; posticis *maris* basi albican-tibus, apice fuscis; *femine* fuscis, apice saturatoribus. ♂ Exp. al. 6 lin.

Head chocolate-brown, paler behind. Face paler. Eyes black. Palpi above, at apex, and at sides, dark brown, paler at base; drab

beneath and between. Antennæ pale fuscous. Thorax dark brown. Patagia fuscous at base and apex, darker below the shoulder. Anterior wings dull, cream-colour, the dark cloud extending two-thirds along the costa and three-fourths along the dorsal margin; it consists of an angulated basal patch and a broad central fascia, with the space between somewhat paler. The basal patch is fuscous, streaked with umber posteriorly, and edged with cream-colour. The central fascia is rich brown, with umber markings; its posterior edge *sharply defined and nearly straight*; its anterior is angulated with a cream-coloured border, and constricted before attaining the dorsal margin; the space, between, is fuscous, becoming cream-colour on the margins. Within the anal angle is an elongated patch with a rounded apex, of the same colours as the fascia, edged with white, and above it a somewhat pyriform mark, with a sharply defined edge, and curving downwards, along the margin at the anal angle; the apical angle is clouded with brown. The costal and dorsal margins are *maculated throughout*; on the former, beyond the basal cloud, are three distinct triangular dark brown marks, succeeded by the apical spot. Apical scales umber, at the tips and bases narrowly cream-coloured. Cilia mottled brown, becoming, with the marginal scales, pale cream-colour at the anal angle. Posterior wings white at the base, with a *pearly lustre*, merging into fuscous at the margins, darkest at the apex; the nervures of the wing fuscous, and more distinctly marked than in *A. marginana*. Marginal scales fuscous, with rich cream-coloured bases. Cilia straw-colour. Abdomen fuscous, the caudal tuft pale drab. ♀ Exp. al. 6 lin. In colour more sombre than the ♂: the pyriform mark at the apex is here replaced by several clouded black marks, and in the pale portion of the costa there is only a single spot preceding the apical one. Posterior wings fuscous; cilia whitish.

An uncommon species. Very closely allied to *A. marginana*, hence the specific name, but smaller, and with the apical markings larger and more distinct. It is in the cabinet of Mr. J. J. Weir, who took it near Tunbridge; and in those of Messrs. Bond, Shepherd, and Waring, who took them in the New Forest in June.

11. *Sauciana*, Hüb. Alis anticis ochraceo-albidis, basi pone medium cinereo, nigro, brunneo cæruleoque variegatis; apice brunneo fuscoque strigato; posticis nigro-fuliginosis. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head and face ferruginous brown; the latter darker below. Eyes black. Palpi above and at sides fuscous, alternated with drab; fuscous beneath, drab between. Antennæ dark brown. Thorax and patagia ferruginous, banded with black. Anterior wings dull, cream-colour; the dark portion of the wing extends two-thirds along the costa, and to the anal angle on the dorsal margin; its *posterior edge recedes to the middle, then proceeds in an undulating and advancing course to*

its termination. The basal patch is distinctly visible; darkest posteriorly, and composed of umber streaks, thickly covered with patches with a bluish gloss. The central fascia umber, with darker shades and bluish streaks exteriorly on the costa and towards the dorsal margin. The space between the basal patch and central fascia as dark as either, but entirely suffused with a bluish gloss, and in some instances made up of blue ocellated spots. The *dark spot at the exterior margin of the central fascia is large, and suffuses with the fascia itself, forming a prominent node upon it, accompanied by an apparent sharply-curved incision.* The apical portion of the wing is thickly clouded with dark dusky brown, with two longitudinal black streaks edged narrowly with cream-colour between the central nervures; at the apex is a distinct dark eye-like spot, preceded by two conspicuous marks on the costa. Apical scales dark brown. Cilia smoky-black, slightly shining, and of a bluish tinge, both becoming cream-colour at the anal angle. Posterior wings deep fuscous, darkest at the margins. Marginal scales darker, with pale fuscous bases. Cilia pale fuscous. Abdomen fuscous. ♀ Exp. al. 8 lin. Anterior wings marked as in the ♂, but the delineation more distinct, and the colours richer. Posterior wings darker than in the ♂.

The darkest-coloured of the known British *Antithesiæ*; the ♀ darker than the ♂. Allied to *A. Sellana* and to *A. Gentianana*; in size larger than the former and smaller than the latter. Distinguished from both by the dark colour of the basal cloud, its defined posterior margin, and the paler colour of the pre-apical portion of the wing.

The imago appears in June, and was first captured at Leith Hill, in Surrey, by Mr. Standish. It occurs commonly in the north of England, especially in Lancashire.

The larva feeds on the Bilberry (*Vaccinium Myrtillus*).

12. *Gentianana*, Hüb., Haw. Alis anticis albidis aut pallide ochraceis; basi pone medium nigro, brunneo, cinereo, cæruleo, liturisque albidis variegatis; margine postico fusco-strigato; ad angulum analem et supra in medio punctis atris; posticis fuscis, margine saturatoribus. ♂ Exp. al. $7\frac{1}{2}$ –9 lin.

Head dull brown, paler behind. Face dull brown. Eyes black. Palpi dull brown at apex, pale drab at base. Antennæ obscure brown. Thorax dull brown, alternated with cream-colour. Patagia ochreous, with a brown patch at the shoulder. Anterior wings dull, cream-colour, the dark portion extending two-thirds along the costa; its posterior edge passing in a slightly oblique direction to the dorsal margin. The basal patch angulated and much mottled and streaked, composed of fuscous, grey, dark brown, black, and lustrous blue markings, speckled with cream-colour, and its lower edge somewhat

produced along the dorsal margin. The central fascia is made up of the same colours, but somewhat darker, much angulated on both sides, and edged here and there with cream-colour. The space between this fascia and the basal patch is streaked and reddish on the costa, then of obscure colour to the dorsal margin, superposed with lustrous blue. Close to the posterior edge of the central fascia, and following its outline from near the costa to the dorsal margin, is a pale dusky cloud, beyond which, in the middle, is a dark brown spot; below, there are several others, in a cluster, more or less developed. Near the middle of the apical margin are two or three (sometimes only one) black spots, or longitudinal streaks. The costa is marked throughout alternately with coarse and fine streaks of brown; a brown cloud occupies the apex, sometimes streaky, at others confluent, and extending more or less along the margin. A few lustrous blue scales are towards the apex, and a patch of pale lustrous scales near the anal angle. Marginal scales brown. Cilia slightly shining (long towards the anal angle), dark brown, with ochreous bases, both becoming cream-colour at the anal angle. Posterior wings deep fuscous, darkest at the margins. Marginal scales deep fuscous, with pale ochreous bases. Cilia deep straw-colour, with a dusky line in the middle. Abdomen shining, deep fuscous, the caudal tuft paler. ♀ Exp. al. 8-9 lin.

This species is rarely captured in the imago state, although the larva is to be met with commonly in Teazel-heads. It varies in the intensity of its colours, and also in size. It resembles *A. Sauciana*, but is not so darkly coloured, and is easily separated from it by the ground-colour being more ochreous, and by the posterior margin of the basal cloud being more suffused.

The imago appears in July at Charlton and Sydenham in Kent, at Southend, near Dover, and throughout the metropolitan district. It is not recorded as having appeared in Scotland or in Ireland.

The pupa state is assumed towards the end of May. The pupa is about $3\frac{1}{2}$ lines long, shining, and of an olive-brown colour.

The larva is dirty yellowish white, with a shining black head, sometimes piceous; shield black (sometimes smoky black, with the edges darkest), slightly paler in front, and divided by a slender dorsal line; the spots are oval, elevated, and of a pale olive-green colour. On the twelfth segment is a transverse, long, elevated mark of olive-green colour, darker than the segmental spots, and with a deep fovea on each side. Anal segments suddenly attenuated, with its apex rugose and shining. It is found commonly in Teazel-heads, of which it feeds in the pith. Before going into pupa it spins a long loose white silken web *in* the Teazel-head.

13. *sellana*, Hüb. Alis anticis pallide ochraceis; prope ad apicem brunneo fuscoque variegatis, margine postico brunneo; posticis fusco-nigris. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head and face dusky brown. Eyes black. Palpi longer than the head; above drab at base, smoky black at the apex; at sides dusky; beneath drab. Antennæ fuscous. Thorax dusky brown, speckled with drab, palest behind. Patagia at base dusky brown; the apices drab. Anterior wings dull, drab, inclining to pale ochreous, with dark clouds to near the apex, and the apex itself brown. The basal cloud extends fully three-fourths along the costa, and to the anal angle on the opposite margin: it is composed of a rhomboid darker patch at the base, followed by a somewhat paler space before the central fascia, which is broad, irregular, and tolerably sharply defined, and as dark as the basal patch; an irregular brown patch occupies the apical angle, and between this and the basal cloud, towards the anal angle, is a cinereous spot, bordered with white. On the costa before the middle are two, and beyond three, geminations, the former cinereous, the latter pale drab. Apical scales and cilia brown, paler at the anal angle. Posterior wings at the base whitish, merging into fuscous at the margin. ♀ Exp. al. $6\frac{1}{2}$ –7 lin. Anterior wings as in the ♂; posterior wings wholly fuscous. Marginal scales fuscous, with drab bases. Cilia cinereous.

A rare species, allied to *A. Sauciana*, but much smaller in size, and not so dark in colour. Occurs at the Hilly Field near Mickleham.

14. *ustulana*, Haw. Alis anticis fuliginosis; basi pone medium margineque apicali brunneo ustulatis; punctis duobus costalibus fulvis; posticis fusco-fuliginosis. ♂ Exp. al. $4\frac{1}{2}$ lin.

Head fuscous, slightly darker in front. Face rather darker than the head. Eyes black. Palpi as long, and of same colour as the head, except at the base beneath, where they are paler. Antennæ fuscous. Thorax fuscous, banded with darker brown, the crest rich brown. Patagia fuscous at the base; paler, inclining to dusky drab, at the apex. Anterior wings dull, pale pinkish brown, with a golden tinge, clouded nearly all over with patches and markings of various shades of dark brown. The basal patch is much angulated, has a pale violet tinge at the base which softens into chocolate-brown; the central fascia is of the latter colour, streaked with darker shades, is angulated on both edges, and narrows towards the dorsal margin. The space between this and the basal patch is streaked in the middle, of dark colour, with a pale violet tinge; on the fold is an oblong mark placed longitudinally, with its extremities pale and shining. The apical portion of the wing is filled up with chocolate-brown streaks, especially at the apex, mixed and preceded by dark streaks slightly violet. At the subapical portion of the costa, and at the anal angle, are somewhat paler clouds, having a golden lustre;

the costa is strongly marked with oblique streaks, most distinct before, and immediately beyond the central fascia. Apical scales dull dark brown with pale bases. Cilia dark smoky brown, with a violet tinge and paler bases, both becoming paler at the anal angle. Posterior wings dull golden brown. Marginal scales fuscous, with dusky subochreous bases. Cilia pale fuscous. Abdomen fuscous, shining; the caudal tuft paler and dull. ♀ Exp. al. 5 lin. In general markings like the ♂, but more defined and of richer tone.

The smallest of the known British *Antithesiæ*, and somewhat rare. Distinguished by the ordinarily pale fascia towards the apex of the anterior wings, being much suffused, and not much paler than the basal portion.

The imago appears in June. It occurs in Norfolk, Coombe, and Darenth Woods. It is not enumerated, either by Guenée, or Herrick Schæffer, by which it seems unknown on the Continent.

Genus VII. PENTHINA, TREIT.

Head narrow. Antennæ setaceous, stouter and pubescent beneath in the ♂. Palpi rather longer than the head, curved and porrected upwards; basal joint short and stout; apical minute, oval, half the length of the basal; middle six times as long as the apical, stout, curved, cylindrical, clothed beneath with long scales. Maxillæ stout, much longer than the palpi. Thorax stout, subglobose, tufted behind. Anterior wings: length exceeds twice the width. Costa regularly arched; apex obtuse; apical margin slightly concave, dorsal margin rounded. The discoidal cell extends beyond the middle of the wing, and is wholly situated in the upper half. Posterior wings ample, apex obtuse; apical margin scarcely concave. Abdomen slender, tufted in both sexes.

By Herrick Schæffer, the only example at present known in this genus is associated with the *Antithesiæ*, but it is abundantly distinct both in the form of the larva and in the imago state. The former is more elongated and active; and in the structure of the perfect insect the palpi are very long, independent of the disposition of the colouring being widely different. Treitschke has erected it into a distinct genus as above; and we have adopted his views.

1. *Salicella*, Linn. Alis anticis margine dorsali lata albis; basi macula nigra; costa ad apicem margineque apicali cinereo, fusco, nigro atroque variegatis; thorace niveo, nigro punctato; posticis fuscis, margine saturatoribus. ♂ Exp. al. 9-9½ lin.

Head snow-white behind, black on vertex, with an irroration of

white scales behind, and wholly white under the antennæ. Face shining, white above, black below. Eyes black. Palpi white, the terminal joint pale brown. Antennæ fuscous, the basal joint clothed with black scales above, and white beneath; the tip of the basal joint white. Thorax white, with one or two fine waved bands of black across the vertex; the bifid crest rich brown. Patagia white, with a black spot near the base. Anterior wings shining, snow-white, with a pearly iridescence. The costa is streaked throughout with fuscous, more broadly at the apex. The base of the wing at the costal region, and the dorsal margin, excepting a few dusky streaks, to near the anal angle, broadly white; the remainder of the costal half and the apex beautifully mottled with black, obscure brown, white, and lustrous blue spots and markings; the blue markings are most distinct towards the apex and apical margin. Near the base, on the dorsal margin, is a cluster of minute black dots. Apical scales obscure brown, with ochreous bases. Cilia mottled brown, with paler bases, becoming lighter at the anal angle. Posterior wings fuscous, darkest at the apex. Marginal scales fuscous, the bases whitish. Cilia whitish, shining. Abdomen pale grey; the caudal tuft subochreous. ♀ Exp. al. 10 lin. In general colour darker than the ♂.

This beautiful species is not very common, nor is it subject to variation. The sordid lustrous blue marks, disposed independently in patches on a white ground, is a peculiarity which renders this insect conspicuous and remarkable; the lustrous blue markings in the *Tortricina* assume usually the form of streaks and spots.

The imago appears in June, July, and August, among Sallows and Willows, in the metropolitan district, and the south and south-west of England. We have taken it among Aspens and Alders. According to Curtis, it is found settling in the "trunks of Sallows and Willows, especially of *S. Capræa* and *viminalis*."

The pupa is $5\frac{1}{2}$ lines long. The head, thorax, and wing-cases are black, the limb-cases chocolate-brown and shining. Abdomen deep brown, each segment paler posteriorly; caudal extremity armed with yellowish-brown hooks.

The larva is 9 lines in length, of a dull red-brown colour, and active, stoutest in the middle. The head is small, heart-shaped, black and shining; shield black, with a subdued gloss, and with its fore margin dull brown; the spots are oval, elevated, black, and shining. There is a large, round, rugose, black plate upon the anal segment. Legs dull brown, with the bases of the joints black. It feeds on the various species of Willow, folding the leaves with white silk. It goes into pupa about the beginning of June, and remains in that state about fourteen days.

Genus VIII. SIDEREA, GUENÉE.

Antennæ setaceous, stoutest in the ♂. Palpi longer than the head; basal joint stout, curved; apical *slender*, obovate, densely clothed with short scales, half as long as the basal; middle twice the length of the apical, slightly curved, very stout, thickest towards the apex, clothed with long scales. Maxillæ as long as the palpi. Thorax moderately stout, ovate, not tufted behind. Anterior wings elongate, triangular; length exceeding twice the width. Costa arcuated, somewhat obtuse towards the base; the apex slightly produced; apical margin concave, dorsal margin slightly rounded. The discoidal cell extends two-thirds the length of the wing, and from between the first and second subcostal nervures receives an internal one, which passes to the apical vein between the second and third apical nervures. Posterior wings: apex obtuse; apical margin very concave; dorsal margin straight. Abdomen slender in the ♂, stouter in the ♀, with a caudal tuft at the apex in both sexes.

M. Guenée has chosen the above name for the reception of the only species at present known in this genus, and places it in his 5th tribe (*Sericoridi*), between *Notocelia* (*Aspis*) and *Sericoris*, which does not seem to us as its proper place. It ill assorts with *Notocelia*, from its not possessing the *folded* costa, besides the structure of the palpi being very different: in the venation of the anterior wings, however, it approaches the *Sericorida*. Its location by Mr. Curtis among the *Spilonotæ* appears much more natural; but as that appellation is now restricted to such species as have the costa folded, we must find a new one for the subject of this genus, and therefore adopt M. Guenée's.

1. *Achatana*, Schiff. Alis anticis griseis, cinereo strigatis; macula basi in medio costæ, altera dorsali angulum analem versus, apiceque brunneis; posticis fuscis. ♂ Exp. al. 7-8 lin.

Head and face fuscous. Eyes black. Palpi as long as the head, fuscous, darkest at the apex. Antennæ brown. Thorax and patagia dull brown, the latter palest at the apex. Anterior wings dull, pale grey, with chocolate-brown and brick-red markings. At the base is a chocolate-brown patch, streaked with drab, extending one-fourth along the costa, and one-third along the dorsal margin, with its posterior edge broadly angulated in the middle. At the middle of the costa is a broad, oblique, quadrate patch, passing one-third across the disk, and ending abruptly. On the dorsal margin, occupying from within the anal angle to near the middle, and proceeding to midway towards the costa, is an obtusely rounded patch, of dark chocolate colour, and edged with white posteriorly: in shape this is sometimes conical, but is frequently angulated on its anterior edge,

The costa is marked with six geminated pale streaks, two before the middle, which are produced more or less distinctly to the dorsal margin, and four beyond, which are slightly lustrous, and produced into metallic-lustrous lines. In the apical angle is an oblique, broad, brick-red band, and a similar coloured spot at the apex. The pale portions of the wing are streaked with iron grey. At the anal angle are a few white spots, mixed with broadish, pale, lustrous, blue streaks. Apical margin edged with intense brown scales. Apical scales dull brown, with drab bases, and speckled with white towards the apex. Cilia glossy, iron-grey, with a fuscous tinge; a few white scales at the apex, and a dark patch level with the oblique band on the apical angle. Posterior wings dull, pale fuscous. Marginal scales glossy, fuscous, with straw-coloured bases. Cilia glossy, paler, fuscous. Abdomen dark fuscous; the caudal tuft drab. ♀ Exp. al. 6-8 lin.

An uncommon species: variable in size, colour, and also in the shape of its markings, especially of the basal patch, which is sometimes angulated in the middle, and at others more or less truncate. In general appearance it resembles the *Sericorida*, and also *Lithographia trimaculana*, from all of which it is distinguished by the dark chocolate-coloured patch on the dorsal margin, near the anal angle; in this last respect it resembles *Notocelia Udmanniana*.

The imago appears in June and July, frequenting Hawthorn-hedges, and occurs at Coombe and Darenth Woods; near Beckenham, West Wickham, Lewisham, Northfleet, Ripley; in Norfolk, Devonshire, Worcestershire, &c.

Genus IX. DICHELIA, GUENÉE.

Antennæ inserted in the front of the head, over the eyes; slightly stouter in the ♂. Palpi longer than the head, divergent; basal joint short, stout, curved, truncate; apical as long as the basal, slender, terminating in a point, horizontal; middle ascending, three times as long as the apical, very stout, thickening from the base to near the apex, slightly curved, ascending, and clothed at apex above and beneath with long scales. Maxillæ slender, as long as the palpi. Thorax ovate, not tufted. Anterior wings: length equals twice the width. Costa arcuated somewhat abruptly at the base. Apex obtuse; apical margin subtruncate, straight; dorsal margin slightly rounded. The discoidal cell extends two-thirds the length of the wing, somewhat arched above, and receives an internal nervure, inserted near the first subcostal nervure, and crossing to the apical vein, which gives out five apical nervures, of which the first is furcate midway from its base. Posterior wings concave on the apical

and dorsal margins, the latter very slightly. Abdomen slender, shorter in the ♀, tufted at the apex in both sexes.

The only insect comprised in this genus was formerly associated by J. F. Stephens, in his 'Illustrations,' with the *Lozotænia*, to which it bears considerable resemblance, both in form and colour, and is still retained there by Herrich Schæffer. In consequence of the folded costa being absent, and there being only five apical nervures proceeding from the apex of the discoidal cell on the anterior wings, the rounded apex, truncated apical margin, besides other minor differences in structure, it can no longer remain in that position. M. Guenée has erected it into a separate genus under the above name, but he does not state upon what grounds. He has associated with it, in his Catalogue, *diversana* and *hustrionana*, two continental species, which seem more properly to belong to the genera *Tortrix* and *Sericoris*.

1. *Grotiana*, Fab. Alis anticis ochraceis, subreticulatis; fascia media distincta obliqua, macula costali triangulari postica brunneis; posticis fuscis. ♂ Exp. al. $5\frac{1}{2}$ –7 lin.

Head and face ochreous. Eyes black. Palpi ochreous above and at sides, usually paler between and beneath. Antennæ above and beneath fuscous; basal joint clothed with ochreous scales. Thorax in front, at sides, and behind, ochreous; on vertex smooth, fuscous. Patagia ochreous. Anterior wings shining, ochreous, with rich brown markings. The base is streaked with reddish brown, with an ashy irroration, followed by a plain, ochreous space, slightly clouded with ashy; the central fascia is brown and broad, but with undefined edges, and somewhat angulated; it contracts a little towards the middle, and dilates from thence to the anal angle; the subapical patch, more or less present, streaked with brown and rich ochreous, seldom produced to, or confluent with, the central fascia; the pale portions of the wing streaked and reticulated with reddish brown; the apical margin ochreous, sometimes brown. Apical scales dull drab; cilia paler, both becoming dilute at, and iron-grey beyond, the anal angle. Posterior wings very pale grey, clothed with coarse fuscous scales, darkest towards the margins. Marginal scales fuscous, with luteous bases. Cilia grey at the anal angle, slightly straw-colour at the apex. Abdomen shining, fuscous; the caudal tuft luteous. ♀ Exp. al. $5\frac{1}{2}$ –7 lin.

A somewhat local species, and occurring sparingly, but does not vary, excepting as to size.

The imago appears in July among Hornbeam, Maple, and Honeysuckle. Epping Forest, New Forest, Darenth Wood, Martinhoe in Devonshire, Lewisham, and at Cæsar's Camp, near

Farnham in Surrey, are recorded as its localities. It sometimes comes to sugar.

Genus X. CENECTRA, GUENÉE.

Head covered above with hairy scales, which are somewhat directed over the face. Eyes small. Antennæ with the basal joint long and thickened, clothed with scales above, and pubescent beneath. Palpi thrice as long as the head, somewhat drooping, thickly clothed with short scales; basal joint stout, ascending, truncate; apical joint long, slender, drooping, twice as long as the basal; middle arcuated, thickest in the centre, more than twice as long as the apical. Maxillæ slender, not so long as the palpi. Thorax ovate, not tufted behind. Anterior wings: length equals twice the width. Costa arcuated, obtusely so at the base; apical margin subtruncate, straight; dorsal margin slightly rounded. The apical vein gives out five nervures, of which the first is furcate. Abdomen slender; a small tuft at the apex in the ♂.

The subject of this genus is by M. Guenée removed from *Tortrix*, notwithstanding its general great resemblance. It is still retained there by Herrich Schæffer. Like *Dichelia*, it has but five apical nervures in the anterior wings, and the great length of the palpi is very characteristic.

1. *Pilleriana*, Schiff. Alis anticis stramineis aut ochraceis; macula basin marginis dorsalis versus, fasciis duabus undulatis margineque apicali brunneis; posticis fusco-griseis. ♂ Exp. al. 8 lin.

Head and face drab. Eyes black. Palpi above and at sides drab, irrorated with pale fuscous straw-colour between and beneath. Antennæ dull drab. Thorax drab. Patagia drab, with the bases somewhat ferruginous. Anterior wings shining, pale ochreous, with the apex slightly darker, and the markings more or less fuscous. Near the base on the dorsal margin is a small patch; this is sometimes wanting. At one-third from the base of the costa commences a fascia, nearly straight in its anterior edge, slightly dilating, and un-angulated posteriorly; the subapical patch is here placed just beyond the middle of the costa, and is produced in an irregular and interrupted manner to the anal angle; the apex reticulated. Apical scales and cilia straw-colour, the latter paler. Posterior wings pale grey, clothed with coarse fuscous scales. Marginal scales and cilia pale straw-colour. Abdomen grey, the caudal tuft straw-colour. ♀ Exp. al. $8\frac{1}{2}$ lin. Anterior wings ochreous; *in certain lights with a brassy iridescence*; the markings somewhat as in the ♂, but darker and more clearly defined. Near the base, on the dorsal margin, is a fuscous patch, followed by a very curved fascia, originating before the middle, is widest at its termination; its anterior edge concave,

and its posterior giving out a branch towards the dorsal margin, and pointing to the apical margin. Beyond this, the subapical spot is produced into a second fascia, widest on the costa, diminishing as it reaches the opposite margin; sometimes this fascia is interrupted towards the middle, at the part where it narrows. Apical margin fuscous.

The only place at which this species is recorded to have been captured is near Ventnor, Isle of Wight, where it was taken about thirteen years ago by W. W. Saunders, Esq., in July. It has occasionally turned up since at the same place. Messrs. Buxton and A. F. Sheppard have taken it in some plenty; but it is still rare in cabinets. This insect affects the *Iris foetidissima* in the seed-capsules, of which plant the larva is said to feed. On the Continent the larva is very destructive to the Vine.

Genus XI. CLEPSIS, GUENÉE.

Head small. Antennæ setaceous, stouter and pubescent beneath in the ♂. Palpi twice as long as the head, stout, drooping, thickly clothed with loose scales, which envelope the apical joint; basal joint stout, truncate; apical minute, straight, not so long as the basal; middle, stout, thickened towards the apex, more than three times as long as the apical. Maxillæ short. Thorax subglobose, not tufted behind. Anterior wings in the ♂: length rather more than twice the width. Costa arcuated, obtusely so at the base. Apex acute; apical margin straight, oblique; dorsal margin slightly rounded. In the ♀ the length of the anterior wings is considerably *more than twice the width*, and they are obtusely arched at the base, *but straight beyond*. Apex produced; apical margin concave, oblique; dorsal margin parallel with the costa. Posterior wings obtusely falcate at the apex; apical margin concave; the dorsal margin in the ♀ more rounded than in the ♂. Abdomen slender in the ♂, with a large tuft at the apex; stout and obtuse in the ♀.

This genus is established by M. Guenée, who located it at the end of his 6th tribe *Sciaphilidi*, not however without doubt, as in a foot-note he observes:—"Genus vix *Sciaphilidis* adnumerandum, sed ubi melius?" The only species known, offers very great resemblance to the true *Tortrices*, especially to our first section of that genus, where the anterior wings of the ♀ are semilanceolate (*T. ictarana* and *Viburnana*); the palpi too are of similar structure, and it is just possible that further observation and knowledge of the larva may assign its real position in the latter genus.

1. *rusticana*, Treit.? Alis anticis *maris* ochraceo-cinereis atomis

atris ; posticis cinereis. *Fœm.* : flavis, basi nebula, punctis sparsis ochraceis ; posticis ochraceo-griseis. ♂ Exp. al. 6-6½ lin.

Head dusky brown, paler behind. Face blackish. Eyes black. Palpi longer than the head, dusky, mixed with ochreous. Antennæ dusky ochreous. Thorax and patagia dull ochreous brown. Anterior wings glossy, grey, with numerous short ochreous and dusky streaks disposed over the surface ; towards the middle of the disk is an umbre spot, and another below it, but slightly nearer the apex, both edged with ochreous. Viewing this insect *towards* the base, the wing has a very ochreous appearance. Apical scales and cilia ochreous, the latter with the bases grey. Posterior wings glossy, whitish, clothed with coarse grey scales with a violet tinge. Marginal scales grey, with straw-colour bases. Cilia straw-colour at the apex, otherwise grey. Abdomen dark iron-grey, the caudal tuft ochreous drab. ♀ Exp. al. 6-6½ lin. Head, face, and palpi rich ochreous. Thorax and patagia ochreous. Anterior wings bright ochreous, immaculate, sometimes irrorated with dusky scales, which are occasionally disposed in streaks. Apical scales ochreous. Cilia paler. Posterior wings paler than in the ♂, and with apex slightly ochreous.

A common species. The sexes differ, but, *inter se*, are tolerably constant, both in size and colour.

The imago appears in plenty in marshy places, and occurs in Cambridgeshire, Gloucestershire, Worcestershire, Cheshire, and other parts of England ; also in the vicinity of Edinburgh, and boggy moors in Scotland.

Genus XII. TORTRIX, AUCTORUM.

Palpi longer than the head (sometimes considerably so, as in *T. heparana*), porrected horizontally, usually appressed ; basal joint stout, slightly curved, cylindrical, and drooping, partly enveloped by the clothing of the middle joint, which is more than three times the length of the apical one, stout, arching upwards at the apex, and densely clothed with scales ; apical slender, obovate, drooping, not so long as the basal. Maxillæ shorter than the palpi. Thorax stout, subovate, and tufted behind. Anterior wings : length frequently more than twice the breadth. Costa arcuated, abruptly so at the base ; apex slightly produced upwards ; apical margin truncate, nearly straight, or concave below the apex ; anal angle sometimes produced ; dorsal margin slightly rounded. The costal vein is stout, and reaches to the middle of the costa. The discoidal cell extends beyond the middle of the wing, the subcostal vein arcuated, giving out the three subcostal nervures, which are nearly equidistant. Posterior wings ample ; apex obtuse ; apical margin concave. Abdomen slender and tufted at the apex in the ♂ ; stout and obtuse at the apex in the ♀.

This genus, with the following (*Lozotania*), may be said to comprise the commonest and most generally-known and distributed species in the family, and fairly represent its type. In the early spring months, up to May, their larvæ literally abound; not a plant, shrub, or tree, but affords food for great numbers of them. The ravages of the larvæ of *T. viridana* in our Oak and Hornbeam woods are too well known to be commented upon; nor can the larvæ of *T. Ribeana*, *heparana*, and some others, be said to be scarcely less numerous, although their ravages are never so decided. From their vast numbers, these larvæ perform a very important office in the economy of Nature, by affording food to many of our birds, which appear to live on nothing else whilst they are to be met with.

In this genus we find the type of the venation in the wings, but the structure of the palpi presents no peculiarity.

There are ten British species in this genus, which are arranged in the following order:—

- A. Anterior wings in the ♀ *semilanceolate*.
 - a. Anterior wings *unicolorous* Species 1
 - b. Anterior wings *unicolorous* in the ♂, but frequently *fasciated* in the ♀ Species 2
- B. Anterior wings *unicolorous*, wings of the ♀ *not differing* from those of the ♂ Species 3
- C. Anterior wings of *sober colours*, with darker *fasciæ* and *spots* Species 4-10.

1. *icterana*, Fröl. Alis anticis griseis vel stramineis; posticis pallide fusco-griseis. ♂ Exp. al. 11-12 lin.

Head tawny or ochreous. Face ochreous. Eyes black, slightly shining. Palpi: above ochreous, inclining to ferruginous, paler between; at sides ochreous, darkest at apex, yellowish beneath. Antennæ: above varying from straw-colour to fuscous, alternated with brown, fuscous beneath; basal joint clothed with tawny or ochreous scales. Thorax tawny or ochreous, sometimes irrorated with iron-grey scales; in front narrowly ochreous. Patagia coloured like the thorax, but with their apices paler. Anterior wings dull straw-colour, inclining to ochreous at base; sometimes the wings are grey, irrorated with straw-coloured scales. Apical scales pale straw-colour. Cilia paler. Posterior wings pale fuscous grey, clothed with coarse scales. Marginal scales pale fuscous, with still paler bases. Cilia whitish, or very pale straw-colour, shining. Abdomen shining, pale fuscous, or straw-colour; the caudal tuft straw-colour, sometimes inclining to ochreous. ♀ Exp. al. 10 lin. Anterior wings bright pale ochreous, darkest at base, narrower and more

acute at the apex than in the ♂ in this last respect much resembling the ♀ of *Clepsis rusticana*.

This is a local species, and varies somewhat in colour in the anterior wings of the ♂, which ranges from cinereous to greyish straw-colour. The colours of the ♀ are tolerably constant.

The imago appears in July and August, and occurs at Willesden in Middlesex, in Cheshire, north of England, the vicinities of Edinburgh and Dublin.

The larva is polyphagous, but preferring *Centaurea nigra* and *Plantago Lanceolata*, the leaves of which it folds, and feeds therein. It is black, with conspicuous white spots.

2. *Viburnana*, Schiff. Alis anticis ochreo-fuscis; media fascia obliqua; ante apicem macula trigona dilute ferruginea; posticis fusco-griseis. ♂ Exp. al. 9-10 lin.

Head and face fuscous. Eyes black. Palpi longer than the head, fuscous. Antennæ fuscous, pubescent beneath. Thorax and patagia fuscous. Anterior wings with a satin gloss, ochreous-brown, with indistinct, faint ferruginous markings (these last sometimes wholly wanting). At the middle of the costa arises an oblique fascia, which attains the anal angle; its anterior edge undulated, angulated, and dilated exteriorly. Near the apex, on the costa, is a rounded or triangulate patch. The apical region faintly reticulate. Apical scales and cilia paler than the ground colour of the wings. Posterior wings fuscous, with a subdued gloss. Marginal scales and cilia dusky drab. Legs fuscous, the posterior pair palest. Abdomen glossy, dark fuscous, inclining to umbreous; the caudal tuft large and subochreous. ♀ Exp. al. 10 lin. Anterior wings longer, narrower, and more pointed at the apex, brighter coloured (inclining to ferruginous) than in the ♂, with the markings more defined and distinct.

Not common: variable in the intensity of its colours and markings. In its lighter tints the ♂ is not unlike *T. icterana*.

The imago appears in July, and occurs throughout the country, but more commonly in the north of England; also in Scotland, and at Killarney in Ireland.

The larva feeds on *Myrica Gale*, *Vaccinium Vitis Idæa*, Sea-Wormwood, *Chlora perfoliata*, and other plants. It is white with black spots.

3. *viridana*, Linn. Alis anticis viridibus; costa anguste flava; posticis fusco-griseis. ♂ Exp. al. 8-9½ lin.

Head and face sulphur-coloured, sometimes apple-green, or greenish yellow. Eyes black, slightly shining. Palpi above and between sulphur-coloured, sometimes dull straw-colour; at sides mixed with brown, beneath at apex brown, at base sulphur or straw-colour.

Antennæ straw-coloured, alternated with fuscous; basal joint clothed with sulphur-coloured scales. Thorax and patagia apple-green, narrowly yellow in front. Anterior wings apple-green, with the costal edge sulphur-coloured; the disk is very frequently reticulated with slightly darker green, the reticulation is most distinct upon the venation, particularly at the apex. Apical scales apple-green, with slightly paler bases. Cilia white, sometimes with a yellowish tinge. Posterior wings shining, pale grey. Marginal scales sometimes darker, sometimes paler than the wing, with pale bases. Cilia white. Abdomen grey, the caudal tuft pale fuscous. ♀ Exp. al. 10-12 lin. Same as the ♂, except that the posterior wings in some specimens are broadly edged with a delicate green flush, visible in certain lights.

Variation: there is one variety, in which the head, thorax, patagia, and anterior wings are of a primrose colour; but almost all the specimens we have seen are females. According to Stephens, in his 'Illustrations' (Haust. vol. iv. p. 69), these are erroneously stated to be faded specimens, and are "the *Tortrix Suttneriana* of the Wien Verz." In the Stephensian Cabinet, at the British Museum, is an instance of this variety, which is in fine condition. The typical insect varies as to intensity of colour, and slightly as to size.

The imago appears from the end of June to the middle of July, according to season; is usually extremely abundant, and is distributed generally over the country, particularly in the south of England.

The pupa is about 6 lin. in length, and of a dark chestnut colour, sometimes alternated with paler brown at the bases of the abdominal segments. It is to be found in June, spun up in a white silken web, between united or turned-down leaves of various trees, shrubs, and herbage, but particularly among Oaks.

The larva is active, when full-grown, about 10 lin. in length, of a bright green colour to the middle; beyond of a yellowish green; with minute black spots; the head is hazel colour; the shield bluish green in front, behind greenish brown, streaked and spotted transversely with dark brown. Its food is principally Oak, in some seasons quite defoliating the trees. It is also to be found on Hornbeam, Aspen, Beech, and other forest-trees. The insects bred from larvæ, which had fed upon Beech, turned out uniformly of a pale whitish-green colour.

4. **Forsterana**, Fab. Alis anticis cinereo fuscis; maculis tribus saturatoribus in triangulo dispositis, duæ ad costam, tertia in margine dorsali; posticis fusciscentibus. ♂ Exp. al. 11-13 lin.

Head: dull tawny behind, dull fuscous in front. Face dull fuscous. Eyes velvety black. Palpi: above, between, at sides, and beneath,

fuscous, darkest towards the apex. Antennæ dull fuscous brown above, pubescent beneath; basal joint clothed with fuscous scales. Thorax pale dull fuscous. Patagia coloured like the thorax. Anterior wings shining, pale ashy brown, reticulated with fine dull brown streaks, and two conspicuous dull brown patches on the costa; that nearest the base darkest and most defined, that nearest the apex dilute, and suffused on its posterior edge; a third and larger patch is on the dorsal margin, which extends obliquely to the middle of the wing, and has its anterior edge defined, posteriorly it softens into the ground-colour of the wing. Apical scales with their tips fuscous, and bases ashy grey. Cilia similarly coloured, but slightly paler. Posterior wings pale grey, irrorated with coarse fuscous scales. Marginal scales pale grey, with dirty white bases. Cilia dirty white. Abdomen fuscous grey, the caudal tuft tawny. ♀ Exp. al. 11-12 lin. In colour slightly browner than the ♂, having the same markings, but with the patch on dorsal margin less distinct, and has the posterior wings somewhat paler, with a less irrorated appearance.

This species varies but little in the ground-colour of the anterior wings, but the spots differ both in size and intensity of colour.

The imago appears in June and July, but not commonly: it occurs at Coombe and Darenth Woods, Devonshire, Cheshire, and other places in England. It likewise occurs in the vicinity of Dublin.

The larva feeds on Ivy, Honeysuckle, Privet, and has been bred from Myrtle: it is to be found early in the spring.

5. *dumetana*, Treit. Alis anticis fusco-ochraceis; basi fascia, media altera obliqua, macula costali subtriangulari ante apicem brunneis; posticis basi griseis, apice pallide flavis subreticulatis. ♂ Exp. al. $9\frac{1}{2}$ lin.

Head and face pale fuscous brown. Eyes black, slightly shining. Palpi twice the length of head, and of an uniform pale fuscous-brown colour. Antennæ: above same colour as the head, slightly paler beneath. Thorax and patagia pale fuscous brown immaculate. Anterior wings clay-colour, with an ochreous tinge and dull fuscous-brown markings. Near the base is a well-defined line proceeding from the costa to the dorsal margin, and curved outwardly towards the former; the space enclosed slightly darker than the ground-colour of the wing. Before the middle of the costa commences a broad dilating fascia, regularly undulating on its anterior, and widening and contracting, somewhat suddenly, on its posterior edge, the latter reaching the dorsal margin within the anal angle. Near the apex on the costa is a trigonate patch, with a sharply defined interrupted streak, proceeding from its apex towards the anal angle. The basal portion of the wing, including the central fascia, streaked with

transverse, interrupted, and undulating lines, especially on the costal and dorsal margins; the apical portion reticulated. Apical scales dull, very short, dull brown at base; apices clay-colour. Cilia also dull, and coloured like the apical scales. Posterior wings pale straw-colour, with a pale fuscous cloud at the anal angle; the apex slightly streaked with brown. Marginal scales slightly grey towards the anal angle, straw-colour at the apex. Cilia whitish at the anal angle, merging into straw-colour at the apex. ♀ Exp. al. $9\frac{1}{2}$ lin. Anterior wings with the markings somewhat darker than in the ♂. Posterior wings with a pale grey cloud at the anal angle. Marginal scales grey, with luteous bases. Cilia pale grey at the apex, merging into pale straw-colour at the anal angle.

A rare species, much resembling *L. heparana* in the anterior wings, which however are slightly broader, and the ground-colour is not so dark; the posterior wings are pale, like those in *L. semialbana*.

The imago appears in July, and has been taken near Lewes by Mr. J. J. Weir: it occurs also at Monkswood (its original locality).

The larva feeds upon Oak, from which it has been bred by Mr. T. Brown of Cambridge.

6. *heparana*, Schiff. Alis anticis testaceo-rufis; fusco reticulatis; fascia basi, media obliqua maculaque postica costali saturatoribus; margine posteriori fasciæ mediæ dentata; posticis cinereo-fuscis. ♂ Exp. al. 8-10 lin.

Head and face dusky red brown. Eyes velvety, dark plum-colour. Palpi longer than the head, but of same colour above and at sides, dull drab between and beneath. Antennæ dull brown above and beneath; the basal joint clothed with dusky drab shining scales beneath, and dull brown above. Thorax and patagia dusky red brown. Anterior wings pale red brown, with a purplish tinge on the costal region, and deep ferruginous markings, which are thus disposed; at the base is a patch with an oblique angulated edge; an oblique fascia commencing at the middle of the costa, and extending to the dorsal margin, within the anal angle: this fascia is narrowest shortly after its origin, and widest in the middle, being obtusely angulated on each edge. Between the central fascia and the apex, on the costa, is a trigonate patch, most clearly defined on its anterior edge; the markings are mostly edged with a pale line, as in *L. cinnamomeana*, and the whole surface is thickly streaked with fine irregular dusky grey, interrupted, transverse lines, not assuming the appearance of reticulations. Apical scales short, concolorous with the ground-colour of the wing. Cilia: sometimes paler, at others darker than the marginal scales, and merging into shining grey at the anal angle. Posterior wings dull fuscous, darkest towards the apex. Mar-

ginal scales paler fuscous, with pale bases, especially at the apex. Cilia pale grey at the anal angle, merging into dirty white or very pale grey at the apex. Abdomen fuscous grey, darkest towards the apex; the caudal tuft concolorous. ♀ Exp. al. $8\frac{1}{2}$ –11 lin. Anterior wings coloured and marked as in the ♂, except that the fasciæ are somewhat darker, and the transverse irregular lines appear more as reticulations; but the pale lines at the edges of the chief markings are less distinct, and are frequently wanting. Posterior wings with the cilia darker.

This species much resembles *L. Ribeana*, but does not vary, except as to size, and may readily be distinguished by the larger palpi, by its darker and redder colour, and by the *sharper angulation of the anterior edge* of the central fascia.

The imago appears from end of June to middle of July, but not so commonly as *L. Ribeana*, and is generally distributed.

The pupa is $5\frac{1}{2}$ –6 lines in length, of dark brown colour, most intense upon the dorsal region, particularly on the thorax. This state endures about fourteen days.

The larva is full-fed about the middle of June, and varies from 10 to 12 lines in length, is of a bright green colour, the dorsal region darker, and with elevated shining spots. The head is green, semitransparent, and immaculate. The shield of same colour, sometimes immaculate, and at others with two or four small spots towards the base. The anal segment dotted with black punctures.

7. *Ribeana*, Hüb. Alis anticis testaceo-flavis (aliquando reticulatis) fascia basi, altera media obliqua, maculaque costali postica, saturatoribus, brunneo marginatis; posticis fuscis. ♂ Exp. al. 7–9 lin.

Head and face dull testaceous yellow, or inclining to brown. Eyes dull, intense purplish brown. Palpi: above, at sides, and between, same colour as the head, paler beneath. Antennæ dull brown above and beneath. Thorax and patagia fuscous. Anterior wings dull pale brown, inclining to yellow, more or less streaked, reticulated, and marked with fuscous. At the base is a patch, with its posterior edge nearly straight; at the centre of the costa is a broad oblique fascia, which contracts on both edges shortly after its origin, then dilates, and proceeds to the dorsal margin, but again gradually and slightly contracting towards its termination; that part of its posterior edge near the dorsal margin frequently indistinct. A semilunate patch is upon the costa near the apex; the pale portions of the wing are marked with fine wavy transverse lines towards the base, and reticulated towards the apex. The edges of the principal markings are deepest in colour, and frequently bounded outwardly with a paler line. Apical scales shining, fuscous. Cilia

paler, becoming dusky at the anal angle. Posterior wings dull fuscous. Marginal scales shining, fuscous with luteous bases. Cilia shining, pale grey. Abdomen fuscous, darkest towards the apex, straw-colour beneath; the caudal tuft straw-colour. ♀ Exp. al. 9–10½ lin. Antennæ slender. Anterior wings marked and coloured as in the ♂. Abdomen, stouter luteous tuft at the apex.

This is a very abundant and variable species, both in the ground-colour and in the markings; and the variation ranges under three heads, viz.: *L. Ribeana* proper, where the ground-colour is as above described; *L. grossulariana*, with the ground-colour pale testaceous yellow, and slightly darker markings; and *L. cerasana*, with the ground-colour like *L. grossulariana*, but with the markings of dark brown, approaching to umber, and having the dorsal margin towards the base and middle much clouded with the same colour, but paler.

The imago appears in June and July, and is generally distributed throughout the country.

The pupa is from 5 to 6 lines in length, with the sides, wing-cases, and ventral portions pale brown; the dorsal portion darker, with umber clouds and spots across the thorax.

The larva feeds on many trees: Elm, Oak, Hazel, Peach, Bramble, Lime, Laburnum, Mountain Ash, &c., and may be found abundantly in May. It is of an olive-, or sometimes of a bluish-green colour; the dorsal vessel darker, with oval elevated black spots; the head is variable, sometimes black, with yellowish clouds, at others green, diaphanous, and with brown spots, streaks, or markings, and sometimes immaculate. The shield is green anteriorly, black at the base; sometimes with a lunate black mark on each side of the dorsal division, and sometimes immaculate. The anal segment is sometimes terminated by a large, horny, oval, black plate, at others pale green, irrorated with black punctures.

8. *cinnamomeana*, Treitschke. Alis anticis cinnamomeis, subreticulatis; basi medioque fasciis obliquis, macula costali ante apicem pallide ferrugineis; capite antennisque maris albidis; posticis basi fuscogriseis; apice subflavescentibus. ♂ Exp. al. 9–10 lin.

Head ferruginous behind, pale fuscous on the vertex, whitish in front. Face white. Eyes intense purplish brown, with a velvety appearance. Palpi twice the length of the head, white between, pale cinnamon-colour at the sides, whitish at base and beneath. Antennæ clothed with pale luteous or straw-coloured shining scales, especially the basal joint. Thorax pale ferruginous. Patagia concolorous with the thorax, but more glossy. Anterior wings red-

dish cinnamon-coloured, with a broad, obliquely margined, pale ferruginous patch at the base, followed by a similar coloured fascia, broad and slightly dilated on its posterior edge, shortly after its origin at the costa; before the apex, on the costa, is a semilunate mark, most defined towards the base of the wing; the apical region reticulated; the edges of the basal patch, the central fascia, and the inner edge of the lunate mark are bounded by a pale line. Apical scales rich pale ferruginous. Cilia concolorous, merging into greyish at the anal angle. Posterior wings pale fuscous, with a greyish tinge at base, and a ferruginous hue towards the apex. Marginal scales fuscous at the anal angle, gradually assuming a ferruginous hue at the apex. Cilia shining pale grey. Abdomen pale fuscous, with a ferruginous tinge; the caudal tuft pale fuscous. ♀ Exp. al. 10–12 lin. Head and face pale ferruginous. Palpi pale ferruginous at the sides and above, whitish beneath from base to near the apex. Anterior wings marked as in the ♂, but warmer tinted, and the reticulation stronger. Posterior wings with the apex broadly and distinctly yellow.

This species is very closely allied to *L. Ribeana* and *L. heparana*, but is readily distinguished from either by the narrowness and rich cinnamon-colour of the anterior wings, and the more uniform width of the central fascia.

The imago appears in June and July, among Beeches at Mickleham, Coombe Wood, Weybridge, Black Park, in Worcestershire, &c.; but until the last few years was only of occasional occurrence: it is now in most collections.

The pupa is $4\frac{1}{2}$ lines long, glossy chestnut-brown.

The larva is green, darker above than beneath. Head yellow; shield with a black mark round the hinder margin; and has been bred from Larch and Maple by Mr. Thomas Boyd.

9. *Corylana*, Fabr. Alis anticis flavis brunneo reticulatis; lineis tribus obliquis distinctis rufis; posticis griseis; apice flavescentibus. ♂ Exp. al. 9–10 lin.

Head pale reddish yellow behind, straw-colour in front. Face straw-colour. Eyes intense purplish brown, with a velvety appearance. Palpi twice the length of head; above, beneath, and between, straw-colour; at sides pale ferruginous, sometimes dusky. Antennæ straw-colour above, brown and pubescent beneath; basal joint densely clothed above and beneath with straw-coloured scales. Thorax pale reddish yellow. Patagia of slightly deeper colour than the thorax. Anterior wings pale yellow, inclining to orange, streaked and reticulated with rich ferruginous brown; near the base is an oblique streak from the costa to the dorsal margin, the space enclosed being more or less marked with irregular lines, which do not attain

the dorsal margin ; at the middle of the costa is an open fascia, formed by two prominent, undulating, oblique streaks, diverging shortly beyond their origin, and attaining the anal angle. On the costa, midway between the central streaks and the apex, is a strongly defined streak, which is more or less produced in a zigzag course to the middle of the apical region, and sometimes even to the anal angle. The origin of the streak at the costa suffused with brown ; and the wing, beyond the basal streak, more or less reticulated, particularly towards the apex. Apical scales deep ferruginous brown. Cilia shining, slightly paler, and both merging into iron-grey at the anal angle. Posterior wings : superior margin white, base fuscous grey merging towards the apex, which is broadly pale yellow, with grey markings. Marginal scales grey, with luteous bases. Cilia paler. Abdomen pale fuscous, darker towards apex ; the caudal tuft pale grey or dirty straw-colour. ♀ Exp. al. 10-12 lin. Head and face unicolorous dull reddish yellow. Palpi above same colour as the head and face, at the sides somewhat darker, straw-colour beneath. Antennæ slender, pale brown above, and shining straw-colour beneath ; basal joint clothed with pale brown above, and straw-coloured scales beneath. Anterior wings marked and coloured as in the ♂ ; posterior wings, with the apex, very broadly primrose colour, and speckled with grey, particularly on the superior margin.

This species differs considerably in the intensity of the markings, but is not otherwise much subject to variation. One distinct variety, however, is known, and is in Mr. Edwin Shepherd's cabinet, and in our own. In these, the fasciæ are almost wanting, being only faintly indicated on the costa.

The imago appears from the end of June to the beginning of July, and sometimes so late as the beginning of August, in tolerable plenty, and is generally distributed.

The pupa measures $5\frac{1}{2}$ -6 lines in length ; is of pale hazel colour, clouded with chestnut on the thorax. Remains in this state about fourteen days.

The larva measures 10 lines in length ; when full-grown is grass-green in colour, with a darker dorsal vessel. The head is immaculate, pale green, with an olive tinge on the vertex. The shield is grass-green, with two small V-like marks near the base, on the vertex ; two others, crescent-shaped, near the sides ; two minute dots in front at the centre, and six more towards the base. The anal segment is opaque, pale green, coarsely dotted, and terminated by a coronet of eight rays. It feeds on Hazel, Dogwood, Ash, Wild Cherry, &c., folding the leaf longitudinally.

10. *transitana*, Guen. Alis anticis fuscis; striga basi subarcuata, fascia media obliqua maculaque postica costali saturatoribus; posticis fuscis. ♂ Exp. al. $7\frac{1}{2}$ –11 lin.

Head and face dusky drab. Eyes intense purplish brown, with a velvety appearance. Palpi longer than the head, pale dusky brown above, slightly ferruginous at sides, straw-colour between. Antennæ dusky brown above and beneath. Thorax dull, pale, fuscous. Patagia dull, pale, fuscous. Anterior wings shining drab, irrorated with fuscous; the markings dull brown, and thus disposed:—near the base is an undulating line, much curved towards the apex; the space enclosed sometimes darker, at others the same as the ground-colour. At the centre of the costa commences a well-defined interrupted fascia, widening suddenly beyond the interruption; before the apex, upon the costa, is a semilunate spot, more or less developed in different specimens, and usually produced into a streak at its apex, which unites with the broad part of the central fascia. The basal portion of the wing thickly streaked with short, irregular transverse lines, especially along the costa; the apical portion reticulated. Marginal scales shining, but of a dull brown colour. Cilia shining drab, becoming grey at the anal angle. Posterior wings dull fuscous. Marginal scales fuscous, with luteous bases, especially towards the apex. Cilia pale grey at the apex, becoming darker towards the anal angle. Abdomen fuscous, palest at the base; the caudal tuft very pale fuscous, shining. ♀ Exp. al. 8–11 lin. In markings the anterior wings resemble those of the ♂; but the colours are richer.

Not an uncommon species, and varies considerably in size, in the ground-colour of the anterior wings, and in the intensity of the markings. In appearance it most resembles *L. Rosana*, but may be distinguished therefrom by the absence of the yellow colour at the tip of the posterior wings, and by the anterior wings being narrower: the chief distinction is the paleness of the cilia, which in *L. Rosana* are cinereous or fuscous.

The imago appears in June and July, and occurs generally throughout the country.

The larva feeds on the Elm, and in the young shoots of the Willow and in the catkins.

FAMILY II. PLICATÆ.

The chief characteristic of this group is the *fold at the base of the costa of the anterior wings in the males*. The length and character of this fold is various.

The anterior wings are ample, and frequently the length ex-

ceeds twice their width; very varied in their colouring, and often bearing in the inner, or dorsal margin, a pale blotch, mostly white, or whitish, and differing in size and shape. Posterior wings usually very broad, frequently broader than the anterior pair.

As in the preceding family, the larvæ for the most part feed in folded, rolled, or united leaves. Some of the genera (*Halonota*, *Dicrorampha*) are chiefly internal feeders, passing their preparatory states in the roots, stems, &c. of herbaceous plants.

There are fifteen genera in this family, which may be arranged as in the following Table:—

A. Anterior wings with the fold on the costa		
<i>not closely appressed to the surface.</i>		
a. Palpi with the <i>middle joint three times</i>	length of the apical	1. LOZOTÆNIA.
a a. Palpi with the middle joint <i>more than</i>	<i>three, but less than four times, the length</i>	
of the apical		3. PTYCHOLOMA.
B. Anterior wings with the fold on the costa		
<i>closely appressed to the surface.</i>		
a. With the <i>fold broad and rounded</i>		2. DITULA.
a a. With the <i>fold narrow.</i>		
b. Palpi with the middle joint <i>not twice</i>	<i>as long as the apical</i>	12. DICRORAMPHA.
b b. Palpi with the middle joint <i>twice as</i>	<i>long as the apical</i>	11. HALONOTA.
		9. PÆDISCA.
b b b. Palpi with the middle joint <i>three</i>	<i>times as long as the apical</i>	10. CATOPTRIA.
		14. CAPUA.
		15. CARTELLA.
b b b b. Palpi with the middle joint <i>more</i>	<i>than three times as long as the apical</i>	13. COCCYX.
b b b b b. Palpi with the middle joint	<i>nearly four times as long as the apical</i>	8. PHLEODES.
b b b b b b. Palpi with the middle joint	<i>four times as long as the apical</i>	4. NOTOCELIA.
		7. LITHOGRAPHIA.
b b b b b b b. Palpi with the middle joint	<i>five times as long as the apical</i>	5. PARDIA.
		6. SPILONOTA.

Genus I. LOZOTÆNIA, STEPHENS.

Palpi slightly longer than the head; basal joint stout, pyriform, truncate, drooping; apical slender, as long as the basal; middle

stout, curved upwards, slightly thicker in the centre, diminishing towards the apex, densely clothed with short scales, three times as long as the apical. Maxillæ longer than the palpi. Thorax stout, subglobose, not tufted behind. Anterior wings in the ♂ not exceeding twice the width, in the ♀ more than twice the width. Costa: in the ♂ obtuse at base, and with a flap, or fold, extending from the base to the middle; in the ♀ abruptly arched at the base. Apex produced slightly upwards; apical margin concave below the apex. Anal angle obtuse and rounded; dorsal margin straight. The discoidal cell is situated in the upper half of the wing, is elongate and slightly arching. The sixth apical nervure attains the margin considerably above the anal angle. Posterior wings: apex obtuse, apical margin concave, dorsal margin entire. Abdomen slender in the ♂, with a caudal tuft at the apex; stout, obtuse at the apex, and without tuft, in the ♀.

A genus under this name was established by J. F. Stephens, for the reception of such species of the Linnæan genus *Tortrix* as are marked with oblique bands or fasciæ across the anterior wings; but in the present arrangement it is applied only to such of them as have the *costa folded* in the ♂, the remainder being retained under the latter appellation.

The habits of these insects are similar to those in the preceding genus, both in the larva and imago state; and they are equally abundant.

In addition to the fold on the costa, the *apex of the anterior wings is more produced and curved upwards* than in *Tortrix*, besides there being considerable disparity in the markings of the sexes of the species included in the division *b* of the second section of the following Table.

In repose, these insects sit very flatly on the plane of position, holding the wings but slightly deflexed. From the very broad bases of the anterior wings, they have much the appearance of a bell, and are called by collectors "Bell-moths."

The larvæ are exceedingly common and active in their movements when disturbed, wriggling and contorting their bodies in a very violent manner; they spin, fold, or roll themselves up in the leaves of their food-plants, and frequently assume the pupa-state in their larval habitations; it is, however, not unusual for them to quit the food-plant, and spin up in others quite different, so that the mere *finding of a PUPA* on a plant is not always a criterion that the larva has fed upon it. In this genus, as in *Tortrix*, it requires great experience to discriminate the larvæ—their appearance, habits, and economy being so very similar; and to this circumstance we attribute the very little pro-

gress that has been made in the study of the early history of this interesting group.

The European species are numerous, of which ten are found in Britain, and may be arranged as in the following Table:—

- | | |
|--|--------------|
| A. Anterior wings with a <i>small fold or flap beyond the base of the costa in the ♂</i> | Species 1-2 |
| B. Anterior wings with the costa in the ♂ folded at the base, the fold <i>sometimes extending to the middle.</i> | |
| a. Anterior wings with <i>similar markings in both sexes</i> | Species 3-6 |
| b. Anterior wings with the markings in the ♂ more complicated, and <i>dissimilar to those in the ♀</i> | Species 7-10 |

1. **Sorbiana**, Hüb. Alis anticis subochraceis; basi fascia et media altera obliquis, maculaque subtriangulari ante apicem brunneis; posticis fusco-cinereis. ♂ Exp. al. 11-13 lin.

Head tawny in front, inclining to ochreous behind. Face fuscous, becoming paler towards the palpi. Eyes intense purplish brown, with a velvety appearance. Palpi above the same, at the sides and between dull ochreous, slightly paler beneath. Antennæ clothed with pale brown shining scales; basal joint pale brown above, and straw-colour beneath. Thorax pale fuscous. Patagia pale fuscous, but paler and more shining towards the apices. Anterior wings shining, tawny, finely reticulated with dull brown, and having a slightly darker oblique fascia occupying the base, followed by a central olive-brown one commencing narrowly at the costa, contracting somewhat in its course, then suddenly dilating at its hinder edge, which attains the anal angle—its anterior edge is nearly straight; between the central fascia and the apex, on the costa, is a brown patch of semilunate shape, darkest on its anterior edge: this patch is sometimes faintly produced, and mingles with the central fascia at its dilated angle, both together assuming the form of the letter Y; the disk of the wing at the apex reticulated with brown. Apical scales short, yellowish. Cilia shining, straw-colour, and merging into grey at the anal angle. Posterior wings clothed with dull fuscous scales, on a pale grey ground, and with the apex narrowly yellow. Marginal scales grey, with straw-coloured bases. Cilia pale grey at the anal angle, merging into dirty-white towards the apex. Abdomen shining fuscous grey, darkest towards apex; the caudal tuft shining, tawny. ♀ Exp. al. 13-14 lin. Anterior wings marked as in the ♂, but more distinctly, the colour richer, or with an ochreous tinge, and the reticulation more diffused. Posterior wings darker at the apex, and more suffused with a yellowish tinge. Marginal scales wholly straw-colour at the apex. Cilia pale grey at the anal angle, merging into straw-colour at the apex.

This species varies considerably in size, and somewhat resembles *Tortrix Forsterana*, but is distinguished from it by its *tawny hue* and larger and more conspicuous spots. It occurs less sparingly than *L. Forsterana*.

The imago appears in June at Darenth Wood, Epping Forest, Coombe Wood, in Cheshire, &c.

The larva feeds on the Hazel, Birch, and Oak.

2. *musculana*, Hüb. Alis anticis griseis; basi macula angulata, medio fascia obliqua maculaque costali brunneis; posticis fuscis.
♂ Exp. al. 7-8 lin.

Head fuscous. Face paler. Eyes black. Palpi longer than the head; above and at sides fuscous, paler at base, pale drab beneath and between. Antennæ alternated with drab and brown. Thorax and patagia fuscous, the latter slightly paler at the apex. Anterior wings dull drab, marked and reticulated with fuscous and brown; at the base is a pale fuscous patch (sometimes obsolete or nearly so), with its posterior border angulated or rounded, and edged with castaneous brown. At the middle of the costa commences a rich golden-brown fascia, which dilates soon after its origin, occupying about twice the space upon the dorsal margin, is darkest and most sharply defined anteriorly, where it is also streaked and spotted with umber; in the subapical portion of the costa is an undefined, somewhat triangular, fuscous cloud; and sometimes below this are two undulating umber streaks produced towards the anal angle; the pale portions of the wing more or less streaked or reticulated with brown, particularly the apical portion. Apical scales drab, alternated with patches of dark brown. Cilia glossy, tawny, and becoming iron-grey at the anal angle. Posterior wings and marginal scales glossy, fuscous, with a bronze lustre, especially at the apex. Cilia pale drab. Abdomen rich fuscous, the caudal tuft tawny. ♀ Exp. al. 9-10 lin. Anterior wings paler, and with the central fascia sometimes angulated and more suffused posteriorly.

A common species, variable in size and in the intensity of its colours, particularly in the ♀. In appearance coming nearest to *Tortrix transitana*, both in size and markings; the central fascia, however, is *more distinct, broader, and less interrupted*.

The imago appears in May amongst Brambles, and occurs at Darenth, Coombe, Birch, West Wickham, and Plumstead Woods, and other places in the metropolitan district, at the New Forest, in Cheshire, Somersetshire, &c.; it also occurs in the vicinity of Edinburgh, and near Dublin and Enniskerry in Ireland.

The larva feeds on the Bramble, between united leaves, and is full-fed about September; it then spins a slight cocoon, and changes into pupa about November.

3. *laticornis*, Stainton, *Ent. Ann.* 1837, p. 100. Alis anticis stramineis; fascia media obliqua maculaque postica costali brunneis; posticis albicantibus. ♂ Exp. al. 8-9 lin.

Head and face ochreous, the former fuscous just above the eyes. Eyes black, slightly shining. Palpi above, between, and at base beneath ochreous; sides and apex fuscous. Antennæ above fuscous; basal joint clothed with ochreous scales; beneath paler; the basal joint clothed with fuscous scales. Thorax and patagia ochreous. Anterior wings shining pale ochreous, with pale brown markings, the costal fold broadly fuscous at base; at the centre of the costa commences a broad dilating fascia, narrowest and strongly marked at its origin, suddenly and widely dilating to the middle, and then contracting before attaining the dorsal margin: this fascia is suddenly pale and scarcely visible from the dilation to the dorsal margin; the subapical dorsal patch is clearly defined and somewhat produced inwardly on its anterior edge; a few faint maculations at the apex. Apical scales dull, pale ochreous. Cilia also dull, slightly paler. Posterior wings very *pale straw-colour, with a distinct fuscous margin*. Marginal scales and cilia slightly darker. Abdomen and caudal tuft dull shining straw-colour. ♀ Exp. al. 8-9 lin. Altogether paler. Anterior wings immaculate, pale ochreous, slightly darker towards the apex. Posterior wings without the fuscous edging, as in the ♂.

First described in the 'Entomologist's Annual' for 1837, p. 100, and "captured by Mr. S. Stevens in a salt-marsh at Southend in July." It much resembles *L. semialbana*, agreeing therewith in size and colour, but is *much more variable as to the intensity of the markings*, which are sometimes almost obliterated; the posterior wings, too, are unicolorous. It also comes near to *L. costana*, but is *smaller, the markings less decided, and is without the satiny gloss* so characteristic of this last-named species.

In the cabinets of Messrs S. Stevens, H. T. Stainton, Edwin Shepherd, A. F. Sheppard, F. Bond, and others.

4. *semialbana*, Guen. (*Modeeriana*, Linn., Haw.). Alis anticis stramineis; media fascia, maculaque postica ad costam brunneis; posticis basi canis; apice dilute stramineis. ♂ Exp. al. 9 lin.

Head pale ochreous yellow. Face straw-colour. Eyes black, slightly shining. Palpi straw-colour. Antennæ straw-colour. Thorax and patagia pale ochreous. Anterior wings pale yellow; at the base, on the dorsal margin, is a pale ochreous brown cloud; the central fascia is broad, ochreous brown, deepest coloured on its anterior edge and towards the dorsal margin; the anterior edge undulate, the posterior biangulate, and dilating in its course; the semi-lunate spot near the apex, on the costa, paler than the central fascia,

with one distinct streak proceeding from it to the anal angle; a few slight reticulations at the apex. Apical scales shining yellow. Cilia somewhat paler, both becoming whitish at the anal angle. Posterior wings: *the anal half pale dusky, the costal half white*; the apex with a pale yellow tinge. Marginal scales and cilia shining white. Abdomen pale fuscous, the caudal tuft somewhat luteous. ♀ Exp. al. $8\frac{1}{2}$ –9 lin. Anterior wings coloured and marked like the ♂; but the marks are very dilute and undefined. Posterior wings more dilute.

A very rare and local species, but does not vary.

The imago appears in July near Darenth, Mickleham, and at Bourdeau Hangers, near Petersfield, Hants, at which latter place it was taken in July 1842 (*vide* 'Ann. & Mag. Nat. Hist.' 2 ser. vol. v. p. 110).

5. *costana*, Schiff. Alis anticis *maris* stramineis, *foeminae* ochraceis; macula basi, altera postica costali fasciaque media brunneis; posticis dilute griseo-stramineis, apice subreticulatis. ♂ Exp. al. $8\frac{1}{2}$ –10 lin.

Head pale ochreous on vertex, fuscous in front. Face fuscous. Eyes black. Palpi longer than the head, above and between pale ochreous, fuscous at sides, darkest at apex; ochreous, sometimes straw-colour, beneath. Antennæ straw-colour above, fuscous beneath; basal joint fuscous above, clothed with shining pale-coloured scales beneath. Thorax pale ochreous on vertex, slightly fuscous at sides. Patagia ochreous, dusky at base. Anterior wings glossy straw-colour, sometimes pale ochreous, with brown markings; the costal fold broadly brown at the base, followed by one or two streaks, and one or two brown spots near the middle of the wing at the base; before the middle of the costa commences an angulated fascia, strongly indicated at its origin, usually becoming suddenly paler in its course to the dorsal margin, where it is more or less defined (sometimes this fascia is represented by a few brown spots near the costa, succeeded by an ochreous cloud and a dark mark on the dorsal margin): the subapical costal patch is fuscous, maculated with dark brown, well-defined; and the apical region of the wing more or less dotted. Apical scales dull straw-colour; cilia also dull, and slightly paler, both merging into pale grey beyond the anal angle. Posterior wings *dirty white at base, with a pearly lustre, at the apex slightly straw-colour, sometimes grey, and apparently maculated, from the fuscous spots beneath showing through.* Marginal scales and cilia same colour as the wing. Abdomen and caudal tuft straw-colour or pale ochreous. ♀ Exp. al. 9–11 lin. Head, face, thorax, and patagia dull ochreous. Palpi dull ochreous, tinged with fuscous above and at sides, dull straw-colour beneath. Antennæ dull ochreous (sometimes fuscous) above, and fuscous beneath. Anterior wings glossy dull ochreous, marked like the ♂, but with fewer maculations at the

base and apex ; posterior wings of a pale brownish hue. Abdomen pale fuscous ; the apex acute, and slightly ochreous.

A very conspicuous species, varying considerably in the extent and colour of the markings, and somewhat also in size ; allied to *L. semialbana* and *L. latiorana*, but distinguished from either by *the glossiness of the anterior and posterior wings*.

The imago appears in June and July, commonly in moist, marshy places, flying at sunset.

The larva is polyphagous, but attached chiefly to low herbage. It has been found feeding on *Epilobium hirsutum*, *Anudum phragmites*, *Cochlearia armoracea*, *Comarum palustre*, on various grasses, &c. It is dull, dark brown, with a black shining head, very active, and wriggles violently on the slightest disturbance.

6. *unifasciana*, Dup. Alis anticis testaceo-rufis ; fascia media obliqua maculaque postica dorsali saturatoribus, obsoletis ; posticis griseis. ♂ Exp. al. $6\frac{1}{2}$ – $7\frac{1}{2}$ lin.

Head testaceous yellow, with a reddish tinge. Face slightly darker than the head. Eyes somewhat shining, black. Palpi as long as the head, and of the same colour throughout. Antennæ pale brown above, still paler beneath. Thorax and patagia same colour as the head. Anterior wings dull ochreous, with a slight reddish tinge, with pale reddish brown markings, and the apex reticulated with some dusky markings on the dorsal margin ; the base is occupied by a broad, very obliquely bordered patch, slightly darker than the ground-colour of the wing, and terminating on the dorsal margin in a dusky spot ; at the centre of the costa commences a slender, oblique, faintly defined fascia, most apparent at the costa and at the anal angle, within which is another dusky patch ; on the costa near the apex is a semilunate brown spot. Apical scales shining yellow. Cilia paler, merging into grey at the anal angle. Posterior wings pale grey. Marginal scales shining, pale fuscous, with luteous bases. Cilia shining pale grey. Abdomen fuscous, darkest towards apex ; the caudal tuft shining, and with a leaden tinge. ♀ Exp. al. 7–8 lin. Anterior wings of a redder hue, paler at the base, and without the markings as in the ♂. Abdomen with the caudal tuft small and luteous.

The smallest British species of this genus : it varies considerably in size, and somewhat in colour.

The imago appears abundantly among Privet in June and July, of which shrub the larva spins the leaves of the young shoots together, assuming the pupa state therein.

7. *fulvana*, Schiff. ? Alis anticis *maris* ochraceis ; basi macula marginale dorsali elongata obliqua, fascia media lata irregulari apiceque brunneis saturatis ; *feminae* testaceo-flavis, brunneo reticulatis ; strigis tribus undulatis saturatoribus ; posticis basi cinereis, apice auranteis subreticulatis. ♂ Exp. al. 8-11 lin.

Head smoky purplish brown on vertex, ochreous over the eyes. Face smoky purplish brown. Eyes black, slightly shining. Palpi long as the head, dull brown. Antennæ dull brown, paler beneath. Thorax and patagia dull, reddish brown in front, somewhat paler behind ; the crest dark brown. Anterior wings of a dull, smoky-pink colour, with the apical region ochreous ; at the middle of the costa commences a deep brown oblique fascia, well-defined and nearly straight on its anterior edge, narrow at its origin, dilating posteriorly into a broad suffused patch, and narrowing again before attaining the dorsal margin ; the subapical costal lunate spot is in this species much wider, not sharply defined, but suffusing with, and of the same colour as, or slightly paler than, the central fascia ; the basal portion of the wing towards the costa is clouded with pinkish brown ; and near the base of the dorsal margin is a reniform deep brown spot of a velvety appearance, edged with yellow scales, as is also the anterior edge of the central fascia ; on the apical margin is a black, somewhat wedge-shaped streak, preceded by another streak, brown and irregular in shape, falling into the apical margin towards the anal angle ; the apical portion of the wing reticulated. Apical scales and cilia variable, dull, in different specimens ranging from deep dusky brown to dull ochreous, sometimes ochreous tipped with brown, both becoming ochreous at, and dusky brown beyond, the anal angle. Posterior wings dull fuscous at the base, with the apex broadly yellow and more or less speckled with dusky markings. Marginal scales fuscous at the base, yellow at the apex, with pale bases. Cilia dusky. Abdomen fuscous ; the caudal tuft fulvous. ♀ Exp. al. 10-13 lin. Head and face dull pinkish drab. Eyes dark brown. Palpi dull brown above, ferruginous at sides and beneath. Antennæ dark brown. Thorax and patagia dull pinkish drab, the crest of the former concolorous. Anterior wings dull drab, with a rosy hue ; the whole surface, particularly at the apex, reticulated with chocolate-brown ; near the base is a curved line, followed by another before, and a third beyond the middle of the costa, both attaining the dorsal margin, the last often very irregular in its direction ; a fourth line runs along the apex, nearly parallel with the apical margin, followed by a curved wedge-shaped mark on the latter, of a black or dark brown colour ; on the dorsal margin are two fuscous clouds, one near the base, and a larger one beyond the middle ; on the costa near the base is a fuscous patch, filling up one of the reticulations, and beyond the middle the semilunate mark is present, its inner edge suffusing with the ground-colour of the wing. Apical scales and cilia dull, deep brown, with paler bases, both becoming ochreous at,

and dusky brown beyond, the anal angle. Posterior wings: the posterior half fuscous, with a yellowish tinge, the apical half rich yellow speckled with fuscous. Marginal scales at the anal angle fuscous, yellow at the apex. Cilia shining, the tips fuscous at the apex, pale grey at the anal angle, the remainder yellow. Abdomen fuscous, with the apex rich yellow.

This beautiful species varies considerably in size and colour. In some instances the ground-colour of the anterior wings is dark fuscous inclining to umber, and the markings of a velvety appearance; these constitute the var. *L. fuscana* of Linn., Fabr., Haw., Steph.

The imago appears not very commonly in June and July.

The pupa is $5\frac{1}{2}$ lines long, fuscous beneath, and chestnut-brown on the dorsal region and towards the head.

The larva feeds on the Oak, Bramble, Raspberry, Apricot, Rose, &c. When full-grown it is 10 lines in length, of a grass-green colour, with a darker dorsal vessel. Head rugose, shining, chestnut-brown. Shield greenish white at its anterior margin, merging suddenly into brown, and then into black at the base. The spots on the body are jet black and shining. The anal segment is rugose, pale green, and with a few small dark punctures on the surface.

8. **Roborana**, Hüb. Alis anticis fuscis; basi macula margine dorsali, altera magna angulata pone medium, striga costali postica brunneis fuliginosis; posticis griseo-fuscis, ad apicem flavicantibus.
♂ Exp. al. 10–11 lin.

Head and face dull, pale fuscous. Eyes slightly shining, intense purplish brown. Palpi as long as the head, pale fuscous above and at sides, paler beneath and between. Antennæ pale fuscous above and beneath; the basal joint beneath clothed with dull drab shining scales. Thorax and patagia pale fuscous. Anterior wings with a satiny appearance, pale fuscous, with a pale violet tinge; at the base of the dorsal margin is a rich brown curved patch, truncate at its apex, followed by another in the middle of the wing, of similar colour, shaped somewhat like a vase, reaching the dorsal margin, but not extending to the costa; towards the apex, on the costa, commences a curved wedge-shaped streak, broad at its origin, and terminating in a point on the margin above the anal angle; on the apical margin is an obscure brown or blackish irregular streak; the edges of the wedge-shaped streak, of the basal patch, and the anterior edge of the central mark are bordered with shining drab scales. Apical scales and cilia dull, pale fuscous, the latter slightly paler. Posterior wings fuscous. Marginal scales paler fuscous, with drab bases. Cilia drab. Abdomen and caudal tuft fuscous. ♀ Exp. al. 10–12

lin. Anterior wings dull, pale fuscous, but without the pale violet tinge of the ♂; the curved patch at the base of the dorsal margin is here represented by an undefined dark brown spot; the central fascia extends from the costa to the dorsal margin, narrow and rather faint at its origin, then dilating widely towards the middle, and afterwards gradually narrowing to its termination; the curved wedge-shaped streak near the apex, and that on the margin, as in the ♂; the edges of all these markings are undefined, and *without the bordering of drab scales*; the pale portion of the wing is streaked transversely at the base, and reticulated at the apex; apical scales and cilia dark brown, both becoming paler at the anal angle. Posterior wings fuscous, at the apex yellowish. Marginal scales fuscous, with luteous bases. Cilia pale grey. Abdomen fuscous, the apex acute.

This species resembles *L. fulvana* in size, but is distinguished by the *absence of yellow colour*, and by the *angulated anterior edge of the central fascia* in both sexes. It likewise very much resembles *L. Xylosteana*, but is larger, and the ground-colour of the anterior wings is *darker, the marks more umbreous*, and the *pale lustrous edges of the markings*, as in this latter species, are *wanting*.

The imago appears in July, is somewhat local, and occurs but sparingly. It has been taken, by beating, out of Poplars, Aspens. Oak, Hazel, Birch, &c., at Darenth, Ardley, Swanscombe, and Wickham Woods, Shustoke, in Warwickshire, &c.

9. *Xylosteana*, Linn. Alis anticis griseo-testaceis, macula basi; fascia media lata ad costam bifida, alteraque postica brunneis saturatis; posticis griseo-fuscis, ad apicem flavescens. ♂ Exp. al. 8-8½.

Head and face dull fuscous. Eyes black, shining. Palpi as long as the head, above pale fuscous, at the sides ferruginous towards the apex, yellow beneath. Antennæ dusky brown, basal joint clothed beneath with pale shining scales. Thorax dull, pale fuscous. Patagia usually dull, pale fuscous, but with the base sometimes ferruginous, and the apex paler than the thorax. Anterior wings shining, dull, pale brown or fawn-colour; near the base on the dorsal margin is a rich brown oblong patch, extending obliquely to the middle of the wing; before the middle of the costa, commences the central fascia of the same colour, darkest towards the apex, regularly undulate on its anterior edge, and biangulated and dilating widely posteriorly, ultimately attaining the anal angle; the projection nearest the costa tipped with black, or intense brown; the usual semilunate patch on the costa towards the apex is of a quadrate form, extending nearly to the central fascia; at the apex is a trigonate dark brown patch, followed by another paler one below, which is acute, and points to the apical margin; the edges of the principal markings bordered

with shining yellow or drab scales. Apical scales shining, yellowish. Cilia shining, greyish at apex, becoming drab at the anal angle, and iron-grey beyond. Posterior wings fuscous, edged with yellow at the apex. Marginal scales shining, dark grey, at the anal angle fuscous with luteous bases. Cilia dark grey at the anal angle, paler at the apex. Abdomen and caudal tuft fuscous, the latter yellow beneath. ♀ Exp. al. 9–11 lin. Anterior wings marked as the ♂, but with the anterior edge of the central fascia more distinctly undulate. Posterior wings sometimes broadly suffused with yellow at the apex. Abdomen fuscous, acute at the apex.

A common species, varying somewhat in size, and much as to the colour and intensity of the markings, ranging from pale hazel to umber. The paler instances represent the *Tortrix obliquana* of Haw., and are of very rare occurrence. It most resembles *T. Roborana*, but is smaller, and may readily be distinguished from that species by the *pale lustrous edging to the markings*.

The imago appears in July, is common in the metropolitan district, and generally distributed.

Pupa 5 lines long, dark chestnut-brown above, paler beneath, with short isolated hairs sparingly disposed over the surface. This state endures from one to three weeks.

Larva full-grown about the end of May, measures from 10 to 12 lines in length, is active, of a dull olive- or sea-green colour; the spots white with black centres. The head is shining jet black. The shield has its anterior margin dead white, then softening into brown in the middle, and to black at the base. The anal segment with a conspicuous oval corrugated black plate. It feeds on Oak, Honeysuckle, Beech, Poplar, Sloe, Sycamore, Maple, Whitethorn, Ash, &c.

10. **Rosana**, Linn. *Alis anticis maris retusis, fuscis (aliquando ochraceo-fuscis); macula basi marginis dorsalis, fascia media maculaque postica brunneis; foemineæ subreticulatis lineolis brunneis; posticis basi griseo-fuscis, ad apicem flavicantibus.* ♂ Exp. al. 7–8½ lin.

Head and face dull fuscous, with an ochreous tinge. Eyes intense purplish-brown, with a velvety appearance. Palpi as long as the head, fuscous above, slightly ferruginous at the sides and beneath. Antennæ same colour as the head; the basal joint clothed with pale shining scales. Thorax and patagia dull fuscous. Anterior wings shining fuscous, in some specimens with a purplish flush, particularly in the middle; near the base is an abbreviated brown streak, curved outwardly, and dilated considerably towards the dorsal margin; the central fascia also brown, narrow on the costa, dilating widely in its

course; its anterior edge is well-defined and unangulate in the middle, and attains the middle of the dorsal margin; its posterior edge is undefined and suffusing, dilating suddenly in the middle, and contracting again at its termination; the subapical brown mark is quadrate, well-defined, and from its apical angle proceeds a streak more or less distinct and regular, to the anal angle; the plain portions of the wing streaked transversely towards the base, and reticulated at the apex; extreme margin brown. Apical scales shining, slightly paler than the ground colour of the wing. Cilia shining, pale fuscous, both paler at the anal angle. Posterior wings fuscous, with a yellow cloud at the apex. Marginal scales grey at the anal angle, becoming fuscous (sometimes luteous), with luteous bases at the apex. Cilia concolorous. Abdomen fuscous, with the apex paler. ♀ Exp. al. 7-10 lin. Anterior wings in general colour like the ♂, but much more streaked, and reticulated with brown, and the markings smaller and less distinct; the basal mark in the ♂ is here replaced by a *strong undulating convex line*; the central fascia faintly indicated by a small patch on the costa and a broad suffused cloud towards the dorsal margin; the subapical costal mark is much smaller. Apical scales and cilia the same as the ground-colour of the wings, but paler at the anal angle, and again darker beyond. Posterior wings fuscous, with the yellow patch at the apex broader (in some specimens very broad) and more or less irrorated with fuscous.

An abundant species, and subject to much variation in the colour and intensity of the markings. In general appearance it much resembles *L. roborana*, but is readily distinguished by its *smaller size, and in the apex and anal angle of the anterior wings being less produced*. It may readily be mistaken for *L. transitana*; but the cilia of this latter species are pale, and the yellow colour on the tip of the posterior wings is wanting.

The imago appears from the middle of June to the end of July. It is generally distributed.

The pupa is 5 lines long, chestnut-brown in colour on the dorsal region, softening into dark hazel beneath. It remains in this state from fourteen to twenty-one days.

The larva measures 9 lines in length, is dark olive-green, with a darker dorsal vessel and white elevated spots. The head varies from hazel colour to pitchy brown. The shield is white or buff-colour in front, softening into dark brown or black at the base. The anal segment is grass-green, with pale punctures scattered over the surface. It feeds on Privet, Honeysuckle, Laurel, Ash, Alder, Sallow, and especially the Rose, the buds and leaves of which it devours, sometimes causing considerable mischief in rose-gardens. We have bred this species from larvæ feeding on the Sea Buckthorn (*Hippophoë rhamnoides*).

Note.—Besides the foregoing ten species there is another (*L. Piceana*), of which a single specimen, a ♀, is said to have occurred in this country at the New Forest many years ago: it was originally in the possession of Mr. Stone, from whom it passed into the collection of Mr. Bently, and ultimately to that of Mr. Edwin Shepherd, where it now is at present unique; but as its claims to rank as an indigenous species must be received with doubt, it is merely mentioned here provisionally, lest hereafter it be admitted to our list. Upon the Continent it is a well-known species, and inhabits the Pine-forests of Germany, Sweden, &c., and in size and appearance much resembles *L. fulvana*.

Genus II. DITULA, STEPHENS.

Antennæ in the ♂ *subserrate and plumose*, very hirsute in the ♀. Palpi as long as the head; basal joint moderately stout, curved, slightly narrowing and truncate; apical stout, short, nearly globose, half the length of the basal, and very densely clothed with short scales; middle joint three times as long as the apical, nearly straight, ascending, cylindrical, and scarcely stouter than the basal. Maxillæ longer than the palpi. Thorax stout, subglobose, with a tuft behind. Anterior wings: length exceeding twice the width. Costa regularly arcuated in both sexes; in the ♂ with a *broad rounded fold* at the base, which extends nearly to the middle. Apex obtuse. Apical and dorsal margins slightly rounded. The costal vein does not reach beyond the fold. The discoidal cell is situated in the *upper half* of the wing, and extends beyond the middle. There are *five* apical nervures, the first being *furcate midway beyond its origin*. Posterior wings: apex obtuse; apical margin concave, dorsal margin rounded. Abdomen moderately stout in both sexes; tufted at the apex in the ♂.

At present there is but one British species in this genus, which is separable from the *Lozoteniæ* by the *subserrate and plumose antennæ*, and the *shorter rounded and appressed fold* at the base of the anterior wings, and by the *crested thorax*. The middle joint of the palpi is only *twice the length of the apical*, whilst in *Lozotenia* it is *three times*. In repose the wings are more deflexed. The habits of the larva are very similar.

1. *angustiorana*, Haw. Alis anticis fuliginoso-testaceis; macula basi fasciisque obliquis saturatoribus; posticis fuliginosis. ♂ Exp. al. 6–7½ lin.

Head and face dull ustulated brown. Eyes black. Palpi as long as the head, dull ustulated brown, slightly paler beneath. Antennæ

brown; basal joint clothed with ustulated brown scales. Thorax ustulated brown in front and on the vertex, with a glossy leaden tinge, paler behind; the crest rich castaneous. Patagia ustulated brown at the base; the apical half paler. Anterior wings dull dusky ochreous, with shaded brown markings. The costal fold ustulated and chocolate-brown; base dusky; on the dorsal margin is an oblique elongated patch of deep ferruginous, brightest at the apex. From the end of the costal fold to the dorsal margin proceeds a wavy dilating fascia, usually angulated at the middle of its anterior edge, and deeply incised on its posterior border. Beyond is a second fascia, of rich reddish or chestnut brown, commencing widely on the costa, and narrowing in its course to the anal angle, and has its anterior margin deeply incised; the apex of the wing pale ferruginous; the chief markings are *edged with slightly golden-lusted scales*, and more or less speckled with amber or black, particularly in the middle of the wing. The dorsal blotch, formed by the confluence of the markings, streaked faintly with pale ferruginous. Apical scales and cilia ferruginous, mixed with black; the latter somewhat paler, and sometimes with a rosy tinge. Posterior wings rich purplish brown, darkest towards the margins. Marginal scales of same colour, with the bases paler. Cilia grey, sometimes with a fuscous, at others with a faint rosy tinge. Abdomen brown, the caudal tuft rather paler. ♀ Exp. al. 7-9 lin. Head, face, and palpi cinnamon-coloured, the latter slightly paler at the apex. Eyes black. Antennæ, thorax, and patagia cinnamon-coloured; the crest of the thorax castaneous. Anterior wings cinnamon colour, with ferruginous markings. At the base on the dorsal margin the deep ferruginous patch, as in the ♂, is replaced by a more oblique and more elongated pale ferruginous mark. The central and apical fasciæ are as in the ♂, but pale ferruginous, the latter darker, and the central one *not edged with golden lusted scales, but the costa, between them, is broadly golden*. Apical scales pale ferruginous. Cilia with a rosy tinge, both slightly paler at the anal angle. Posterior wings as in the ♂, but not so dark in colour.

A very common species, variable both in size and colour.

The imago appears in July and August.

The pupa is 3 lines long, of a pale reddish-brown colour, and it remains in this state about fourteen or sixteen days.

The larva is polyphagous, sometimes doing great mischief in gardens among fruit-trees, especially the Apricot. It seems also to be very partial to the Yew. It is 6 lines in length, of a green-drab, or yellowish-green colour. The head is polished, shining green, with a black mark level with and behind the eyes; the shield is also green, its sides and posterior angle margined with black; on the vertex, near the base, are four minute pale brown spots, transversely placed two and two,

divided by the dorsal line, and at the base two larger and darker undefined markings. The spots are of a slightly paler colour than the rest of the body, elevated, and with the centres dark; a luteous hair springs from each. Before assuming the pupa state it spins a slight cocoon of white silk.

Genus III. **PTYCHOLOMA**, LEACH.

Head short. Eyes small. Palpi as long as the head; basal joint very stout, curved, truncate; apical minute, subglobose, not so long as the basal; middle stout, curved, slightly thickened in the middle, more than three times as long as the apical, densely clothed with short scales. Maxillæ short. Thorax stout, globose, not tufted. Anterior wings: length more than twice the breadth. Costa in the ♂ *broadly folded to the middle, and straight beyond*; in the ♀ *regularly arcuated throughout*. Apex obtuse. Apical margin truncate, oblique, and rounded; dorsal margin straight. The costal vein does not extend beyond the fold. The discoidal cell reaches *beyond the middle* of the wing. Posterior wings: apex obtuse; apical margin rounded; dorsal margin slightly concave; basal angle produced. Abdomen robust in both sexes, stoutest in the ♀; apex tufted in the ♂.

There is only one species known in this genus: the singular *furry appearance* of the anterior wings is a peculiarity found in but few of the *Tortrices*. The costal fold is broader than in *Lozotania*, and the *rounded apical margin* of the posterior wings is a distinctive character, and in the palpi it differs from that genus by having the middle joint *more than three times* as long as the apical, *instead of three times* only.

1. **Lecheana**, Linn. Alis anticis luteo-fuscis aut brunneo-obscuris; medio caracteribus 7·1, argenteis; posticis brunneo-fuliginosis.
♂ Exp. al. $6\frac{1}{2}$ – $9\frac{1}{2}$ lin.

Head varying from ochreous to fuscous, mixed with dusky scales over the eyes and behind the antennæ. Face grey. Eyes black. Palpi varying from ochreous to whitish, frequently drab. Antennæ fuscous. Thorax varying from ochreous to fuscous. Patagia somewhat paler. Anterior wings dull, with a furry appearance, the apical half obscure brown, the basal half paler, being more or less irrorated with ochreous scales; on the disk are three silvery marks, together forming the figures 7·1: these marks are more or less distinct in different specimens, and sometimes wholly wanting; sometimes the irroration of ochreous scales is ferruginous, and more or less over the whole wing. Apical scales dark brown. Cilia

ochreous (sometimes grey), iron-grey at the apical and anal angles. Posterior wings deep fuscous. Marginal scales deep fuscous. Cilia white. Abdomen dark fuscous above, pale grey beneath. ♀ Exp. al. $6\frac{1}{2}$ – $9\frac{1}{2}$ lin.

A common insect, subject to much variation in the colour of the anterior wings, and also in the size. The var. *L. obsoletana*, as figured in 'Wood's Index Entomologicus,' pl. 34. f. 1035, is very rare, and has the anterior wings of a dull smoky-black, inclining to umber, with the silvery markings more numerous, and disposed over the surface in streaks and spots.

The imago appears at the end of June and in July, in woody places, among Oaks, Elms, &c., throughout the south of England, and in the Midland Counties; in Scotland, in the vicinity of Edinburgh.

The pupa is pitchy-black, and measures about $5\frac{1}{2}$ lines in length.

The larva feeds on the Sycamore, Maple, Oak, Mountain-ash, Elm, and other trees.

Genus IV. NOTOCELIA, HUB.

Palpi twice as long as the head; basal joint stout, truncate; apical minute, obovate, terminating in a point, not so long as the basal; middle stout, curved, ascending, thickest beyond the centre, four times as long as the apical. Maxillæ slender, as long as the palpi. Thorax rather slender, ovate, not crested. Anterior wings: length equals twice the breadth. Costa *regularly arcuated in both sexes*; in the ♂ with a fold *extending to the middle*; apex obtuse; apical margin slightly concave, dorsal margin rounded. The costal vein does not reach beyond the fold. The discoidal cell extends *scarcely beyond the middle* of the wing. The subcostal nervures are *remote*, the first being inserted near the base; the submedian nervure inserted nearly opposite the second subcostal one. Posterior wings: apex obtuse, concave on the apical margin; dorsal margin entire. Abdomen slender, and with a tuft at the apex in the ♂; stout in the ♀.

There is likewise only one known European species in this genus, which in the habit of the larva presents considerable peculiarities. It is minutely described below, and well figured with details in Fischer von Röslerstamm's 'Microlepidopterologie,' pl. 91. By Guenée this genus is placed at the commencement of his 5th tribe (*Sericoridi*); but as it possesses a costal fold in form and quantity similar to that which obtains in *Pardia* and *Spilonota*, it is now brought in proximity to those genera.

1. *Udmanniana*, Linn. *Alis anticis pallide-cinereis, olivaceo-fusco strigatis albocinctis; macula subtundata ad angulum analem castanea; posticis fuscis.* ♂ Exp. al. 7-9 lin.

Head dull drab. Face drab. Eyes black. Palpi as long as the head; drab above, fuscous beneath. Antennæ pale fuscous. Thorax and patagia drab. Anterior wings dull pale drab, with slightly fuscous markings, and a chocolate-coloured triangular blotch on the dorsal margin. Near the base on the dorsal margin is a slightly fuscous, oblique, and abbreviated fascia, edged narrowly with white at its posterior edge; this is followed by a paler similar coloured mark, with a rounded border, extending from the middle of the costa to the tip of the dorsal blotch. The costa towards the apex is marked with four geminated drab streaks, and below them are two pale fuscous patches, extending to the apical margin. The dorsal blotch has its sides rounded, and is edged with whitish; the pale portions of the wing slightly streaked with pale fuscous. Apical scales brown, with drab bases. Cilia glossy, pale brown, drab at the anal angle. Posterior wings dull pale fuscous, deepening slightly at the margins. Marginal scales slightly darker; the bases drab. Cilia pale fuscous. Abdomen dull drab, tufted at the apex. ♀ Exp. al. 7-9 lin. The markings on the anterior wings darker.

A rather common species amongst Brambles. Tolerably constant both in size and markings.

The imago appears in June and July, and is distributed throughout the country. It occurs also in the vicinity of Dublin.

The pupa is pale chestnut-brown, 5 lines in length, and enclosed in a white silken web.

The larva feeds in the shoots of the Bramble and Raspberry, spinning together and much contorting the young leaves for a covering. It is sluggish and fleshy, of a dirty red-brown colour, 7 lines in length. The head is small, black, and shining; labrum brown; shield black, edged with brown at sides, and in front divided by a slender dorsal line. The warts or spots are oval, elevated, and chestnut-brown. Anal segment with a black oval patch edged with brown.

Genus V. *PARDIA*, GUENÉE.

Palpi longer than the head; basal joint pyriform, drooping, curved, subtruncate; apical slender, obovate, not so long as the basal; middle stout, curved, ascending, thickest beyond the middle, *five times* the length of the apical, clothed beneath, at sides, and apex with long scales. Maxillæ longer than the palpi. Thorax robust.

Anterior wings: length more than twice the width; costa in the male folded to the middle and arcuated beyond; apex obtuse; apical margin concave; dorsal margin rounded; the discoidal cell proceeds *three-fifths* along the wing, the first and second subcostal nervures *remote*. Posterior wings: apex obtuse, apical margin concave. Abdomen slender and tufted in the ♂, stout in the ♀.

This genus is separated from *Spilonota* by M. Guenée: it nevertheless presents no structural differences in the imago, nor do its habits vary.

1. *tripunctana*, Schiff. Alis anticis albidis; fascia basi margineque apicali fuscis obscuris; ad angulum analem macula ocellari plumbea, intra punctis tribus atris; posticis griseo-fuscis. ♂ Exp. al. $8\frac{1}{2}$ –10 lin.

Head deep fuscous, ochreous behind the eyes. Face: above same colour as the head, paler below. Eyes black. Palpi yellow. Antennæ fuscous. Thorax and patagia deep fuscous. Anterior wings white, with a deep fuscous streaky patch at the base, extending *one-third along the costa*; its posterior edge leaves the costal margin in nearly a straight perpendicular line to near the middle of the wing, then recedes, and attains the dorsal margin with a concave curve; a paler streaky fuscous cloud immediately succeeds this patch, to the middle of the costa, and two others below it, paler, one in the middle of the wing; the other on the dorsal margin near the anal angle; the apical half of the costa marked alternately with small and coarse spots; a distinct eye-like mark at the apex, with a cloud extending more or less down the apical margin, all fuscous; at the anal angle is a large ocellated patch, edged before and more widely behind with patches of lustrous leaden-coloured scales, enclosing a white space with three or four black spots or longitudinal stripes between the nervures; at the apex are one or two lustrous leaden-coloured streaks. Apical scales very deep fuscous, with pale bases. Cilia shining deep fuscous, becoming white (sometimes grey) at the anal angle. Posterior wings pale fuscous, slightly darker at the apex. Marginal scales dark fuscous, with paler bases. Cilia pale fuscous, with the bases and apices whitish or straw-colour. Abdomen fuscous; the caudal tuft straw-colour or subochreous. ♀ Exp. al. $6\frac{1}{2}$ –9 lin.

This is a common insect in gardens, and also frequenting hedges. It varies somewhat in size, and slightly in colour. Of the size of *Spilonota Roborana*, and like it in general appearance, but distinguished by the *slightly smoky appearance* of the dark marks, and by the pale portion of the wings being *less speckled*.

The imago appears in July, and is generally distributed

throughout England. Common in the south of Scotland. It occurs also in Ireland.

The pupa is brown.

The larva feeds on the Rose, Bramble, &c. ; it is of a ferruginous colour, with a black head.

Genus VI. SPILONOTA, STEPHENS.

Palpi considerably longer than the head, very densely clothed with long scales, especially towards the apex beneath ; basal joint short, stout, drooping, truncate ; apical minute, slender, obovate, horizontal, not so long as the basal ; middle *five times* as long as the apical, ascending, curved, stout, thickest beyond the middle. Maxillæ longer than the palpi. Thorax moderately stout, ovate. Anterior wings : length exceeding twice the width ; costal fold extending to the middle ; apex obtuse ; apical margin concave ; dorsal margin slightly rounded ; the discoidal cell proceeds three-fifths along the wing ; the costal vein does not extend beyond the fold ; first and second subcostal nervures remote. Posterior wings : apical margin concave. Abdomen slender, and tufted at the apex in the ♂, stout, with the apex obtuse in the ♀.

The extent of this genus is much more restricted than formerly, in consequence of those species hitherto located in it, but not possessing the costal fold, being transferred to *Anticlea*. As a whole, they form a very natural group, and but few others, if any, are known upon the Continent. Of the four British species, those in Section A of the following table bear considerable resemblance to each other. In repose the wings are held much deflexed, but have a rounded loose aspect.

- A. Anterior wings with the basal patch more or less
produced or clouded along the costa Species 1-3
 B. Anterior wings with the *basal patch distinct, and*
not produced along the costa Species 4

1. **Roborana**, Schiff. *Alis anticis albis, cinereo variegatis ; fascia basi apiceque fuscis, ad angulum analem macula ocellari magna subplumbea, punctis brunneis nigrisque ornata ; costa subarcuata albo nigroque obliqua strigata ; posticis griseo-fuscis.* ♂ Exp. al. 9-10 lin.

Head deep fuscous, ochreous over the eyes. Face same colour as the head. Eyes black. Palpi deep fuscous, paler between. Antennæ fuscous brown above, pubescent beneath. Thorax and patagia deep fuscous. Anterior wings white, shining : at the base is a deep fuscous streaky patch, extending nearly one-third along the costa,

its posterior edge undulated and receding to the dorsal margin: this patch is followed *on the costa* by a dark grey streaky cloud, more or less produced in streaks and patches to the dorsal margin, leaving on the latter a white space next the basal patch of greater or less extent; the costa is streaked obliquely throughout its whole course with deep fuscous to beyond the middle, the remainder with fuscous and white; the apical streaks produced; at the apex is a ferruginous brown eye-like spot, which is more or less continued down the apical margin; the anal angle is occupied by a large ocelloid patch, enclosing two lustrous pale leaden-grey clouds, edged with white, with three or four black spots between; at the inner part of this patch, near the dorsal margin, are two somewhat trigonate black spots edged with white, with an interrupted, curved, and irregular streak of same colour, forming its inner edge; its exterior limit towards the apex is indicated by other black spots, intermixed with brown. Apical scales deep fuscous, with pale bases. Cilia brown, with ochreous bases, both merging into white at the anal angle. Posterior wings clothed with pale fuscous scales (darker towards the apex) upon a grey ground. Marginal scales dark fuscous, with straw-coloured bases. Cilia with the middle grey, base and apex straw-colour. Abdomen shining fuscous, the caudal tuft dull straw-colour. ♀ Exp. al. 8-10 lin. In general colour darker than the ♂.

A common insect, varying in size and in the intensity of the colours of the markings. It resembles *Pardia tripunctana*, but is closely allied to *Sp. Rosæcolana*. From the former it may be distinguished by the brighter colours and more speckled appearance of the anterior wings, and from the latter by the straighter costal margin, and the geminations upon it being coarser, and not so regular.

The imago appears in June and July, in gardens and hedges; common throughout the country, and in the vicinity of Dublin.

The larva feeds in the shoots of the Sweet Briar (*Rosa rubiginosa*), Rose, &c., and spins the terminal leaves together.

2. *Rosæcolana*, Doubleday. Alis anticis albis, cinereo variegatis; fascia basi apiceque fuscis; ad angulum analem macula ocellari magna subplumbea, punctis brunneis nigrisque ornata; costa arcuata albo nigroque strigata; posticis griseo-fuscis. ♂ Exp. al. 8-9 lin.

Head dull ochreous, inclining to brown. Face same colour as the head. Eyes black. Palpi pale dusky ochreous, slightly paler beneath. Antennæ fuscous; basal joint clothed beneath with shining scales. Thorax deep fuscous, with two transverse bands of grey across the vertex. Patagia deep fuscous at the base and apex, grey in the middle. Anterior wings white and shining, with fuscous and grey streaks and markings: the basal patch is deep fuscous, streaked

with grey; its posterior edge convex and angulated; the costa is streaked regularly throughout, of a fuscous colour at the base, becoming browner and more distinct towards the apex; the streaks themselves alternately broad and narrow, the apical ones produced, and the spaces between of a lustrous leaden tinge; a brown spot at the apex; towards the costa, and immediately succeeding the basal patch, is a leaden-coloured cloud, tinged with fuscous, and similar coloured streaks and markings proceed from the dorsal margin, which is marked also with fuscous; at the anal angle is a large ocelloid patch, consisting of two enclosed lustrous, leaden-coloured clouds, with a broad white space between, in which are three or four black spots: the borders of this patch consist of an irregular interrupted row of intense brown spots on a paler cloud, proceeding from the dorsal margin, and a curved streak of brown, spotted in the same manner towards the apical angle. Apical scales dark brown, mottled with pale bases. Cilia deep fuscous, both becoming white, clouded with pale grey at the anal angle. Posterior wings pale fuscous, slightly darker at the apex. Marginal scales pale fuscous, with still paler bases. Cilia very pale, with a fuscous tinge. Abdomen pale fuscous; the caudal tuft dull straw-colour. ♀ Exp. al. 9-10 lin. In general colour darker than the ♂.

This species is exceedingly like the preceding (*Sp. Roborana*), and was, until 1850, confounded with *Sp. trimaculana (suffusana)*, when Mr. H. Doubleday described it, and pointed out its differences: see the 'Zoologist' for that year, Appendix, p. 106: he says it is distinguished from *Sp. suffusana* by its larger size, and from that species and *Roborana* "by the *costa of the anterior wings being much rounded, and regularly and obliquely strigated with black and white.*" It is not an uncommon species in some seasons, and appears to be pretty generally distributed over the country.

3. *trimaculana*, Haw. Alis anticis albis, cinereo-nebulosis; fascia basi apiceque fuscis; ad angulum analem macula ocellari plumbea; posticis fuscis. ♂ Exp. al. 7-8 lin.

Head deep fuscous, darkest on the vertex. Face darker than the head. Eyes black. Palpi deep fuscous, slightly paler at the base. Antennæ fuscous, alternated with a paler shade. Thorax and patagia fuscous, mixed with greyish scales. Anterior wings white, with deep fuscous, brown, and grey markings; at the base is a deep fuscous patch, mixed with white, darkest at its posterior edge, which proceeds from the dorsal margin in a direct undulating slightly oblique course, *not attaining the costa.* The costa at the base deep fuscous, with darker streaks, its apical portion white, with alternate broad and narrow chocolate-brown markings; a spot of this latter colour at the apex; below this and the subapical one is a similar coloured mark,

which diminishes to a point at the apical margin, and forms the boundary of the ocelloid patch at the anal angle: this patch is oval, of moderate size, and consists of two lustrous leaden-coloured clouds on a white ground, and very seldom with black spots between; when present they are very minute; its inner edge is bounded by a broad pale brown cloud, arising from the dorsal margin, marked with irregular intense brown spots of variable shape. The central portion of the wing is clouded below the costa with leaden-grey and fuscous, and undefined markings of the former colour more or less diffused towards the dorsal margin, which is usually maculated with brown. Apical scales variable, but mostly of iron-grey, with their bases pale. Cilia slightly shining, smoky-grey, both becoming white, clouded with grey at the anal angle. Posterior wings pale fuscous, slightly darker at the apex. Marginal scales pale fuscous, with subluteous bases. Cilia grey, with a fuscous tinge. Abdomen pale fuscous, the caudal tuft dusky straw-colour. ♀ Exp. al. 8 lin. In general colour darker than the ♂; the basal patch *attaining the costa*.

Allied to *Sp. Roborana* and *Sp. Rosæcolana*, but distinguished from both by its *smaller size*, and the *more suffused anterior wings*: hence "*suffusana*" one of its synonyms. It is rather variable in the intensity of its markings, and is somewhat common.

The imago appears in June and July, frequenting hedges and woods: is generally distributed in England. It occurs also in the vicinity of Edinburgh, and in Ireland.

The larva feeds on the Whitethorn.

4. *amœnana*, Hub. ? Dup. Alis anticis pallide roseis; basi fascia, media apiceque fuscis; ad angulum analem macula ocellari tribus punctis atris; posticis fusco-griseis. ♂ Exp. al. 8-9 lin.

Head fuscous, darkest on the vertex. Face darker than the head. Eyes black. Palpi deep fuscous above, at sides, and beneath, paler between. Antennæ fuscous, alternated with a darker shade. Thorax deep fuscous, mixed with greyish on the vertex. Patagia deep fuscous at the base and apex, greyish in the middle. Anterior wings: dull, cream-colour, suffused with rose pink, with deep fuscous and brown markings; at the base is a deep-coloured patch, made up of fuscous, deep brown, and black markings, mixed with the ground colour, palest on the dorsal margin towards the base; its posterior edge is darkest, angulated, and proceeds *from* the costal fold. The costal fold deep fuscous, streaked with a darker shade of brown; the apical portion cream-colour, marked alternately with broad and narrow brown streaks; the apical ones and the spot at the extreme apex produced, and uniting into a brown mark (spotted with black), which diminishes to a point, and ultimately attains the apical margin

above the anal angle. From the centre of the costa to within the anal angle proceeds an undefined and indistinct fascia, made up of pale ferruginous, brown, and leaden-coloured markings, the dorsal portion being spotted irregularly with black. The ocelloid patch is present, but very undefined; it is of a cream-coloured ground, with two rose-pink clouds and minute spots between them; the dorsal margin speckled with brown. Apical scales mixed, black and white. Cilia dull, mottled iron-grey and pale ferruginous brown, both becoming delicate rose-pink at the anal angle. Posterior wings shining, clothed with coarse fuscous scales on a pearly ground. Marginal scales fuscous, with pale bases. Cilia shining, pale straw-colour. Abdomen pale fuscous, the caudal tuft slightly ochreous. ♀ Exp. al. $8\frac{1}{2}$ –9 lin.

A comparatively new insect to the British list, being first recorded by Mr. Stainton in the 'Zoologist' for 1848, p. 1988. Variable in size and colour; some specimens not so large as *Sp. trimaculana*, whilst others attain to dimensions as large, or even larger than *Sp. Roborana*. In general appearance it is like *Sp. trimaculana*, but the cream and pink ground-colour of the anterior wings at once distinguishes it.

The imago appears in July and August among *Rosa spinosissima* not uncommonly. It seems to affect the coast, having been taken at the Isle of Portland, at New Brighton in Cheshire, and on the coast of Cumberland; it is likewise taken inland at Riddlesdown, Sanderstead, near Stoa's-nest, Boxley, near Maidstone, near Guildford, &c.

Genus VII. LITHOGRAPHIA, STEPHENS.

Palpi longer than the head, clothed with long hairy scales at the sides, beneath, and at the apex; basal joint stout, drooping, pyriform, truncate; apical as long as the basal, slender, obovate; middle stout, curved, ascending, thickest beyond the centre, *four times as long as the apical*. Maxillæ as long as the palpi. Thorax stout, subglobose. Anterior wings: *length equals three times the width*; costa in the ♂ folded to the middle, arcuated; apex obtuse; apical margin concave; dorsal margin slightly rounded; the discoidal cell nearly isometric, extending three-fifths of the length of the wing; the three subcostal nervures equidistant; the costal vein not reaching beyond the fold. Posterior wings: apex obtuse, concave at the apical margin; the median vein furcate at the apex. Abdomen stout in both sexes; tufted in the ♂.

The same cause has operated in restricting the extent of this genus as in the preceding one, the remaining number of British

species being only four. The wings are deflexed in repose, not very compressed to the sides, and have their apices undulately folded.

The species may be arranged in the following order:—

- A. Anterior wings with the ground colour *white*, with grey or black streaks or markings
- a. *without a coloured blotch* on the dorsal margin Species 1, 2
- b. *with a blotch, various in colour* (sometimes produced to a broad fascia) on the dorsal margin Species 3
- B. Anterior wings brown or ferruginous, with a *white* blotch on the dorsal margin (sometimes obliterated) Species 4

1. **Campoliliana**, Schiff. *Alis anticis albidis, basi cinereis; postice macula caerulea atro-cincta in fascia nigra; apice ferrugineo; posticis fuscis, apice saturatoribus.* ♂ Exp. al. 5–6 lin.

Head dirty yellowish white, with some drab scales over the eyes. Face somewhat paler. Eyes black. Palpi dirty yellowish white, with a few dusky scales at the sides near the apex. Antennæ fuscous, alternated with drab; basal joint clothed with drab scales. Thorax yellowish, with grey transverse lines. Patagia yellowish. Anterior wings dull yellowish white, with dark fuscous, black, and ferruginous markings; the costa maculated with black along the fold; below this, on the dorsal margin, are a number of dark fuscous streaks, more or less distinct, and produced, but never attaining the costa. At the middle of the costa is a deep fuscous mark, followed by alternated broad and narrow streaks to the apex, where is a ferruginous eye-like spot, with a white line below, running through the cilia. The anal angle is occupied by a large suffused fuscous patch, marked with black: in this is situated the ocelloid patch, consisting of two bright lustrous blue clouds, separated by a mark bearing the longitudinal black streaks. Apical scales black. Cilia shining, smoky black, with white bases, both becoming white at, and smoky black beyond, the anal angle. Posterior wings fuscous, deepest towards the apex. Marginal scales fuscous, with straw-coloured bases. Cilia white at the anal angle; towards the apex pale grey, with the bases and tips white. Abdomen fuscous; the caudal tuft drab. ♀ Exp. al. 5–6 lin.

This insect varies in size, and slightly in the intensity of its markings, and is rather common.

The imago appears in July in the metropolitan district, in hedges and woods, among Sallows. It occurs also in the north of England, and in Scotland.

2. *cinerana*, Haw. Alis anticis albidis ; basi macula rhombea nigra ; lineis obliquis cinereis ad costam præcipue ; apice puncto nigro ; posticis fuscis, apice saturatoribus. ♂ Exp. al. 6-7½ lin.

Head hoary grey behind, with a pale tawny tinge in front, and mixed with dusky scales behind the antennæ. Face pale, tawny above, grey below. Eyes black. Palpi dusky grey, paler beneath and between. Antennæ dusky grey ; basal joint clothed above with pale grey scales. Thorax iron-grey in front ; the vertex pale grey or drab, irrorated behind with iron-grey and drab scales. Patagia iron-grey at base, drab at the apex. Anterior wings dirty white or very pale drab, streaked and marked with umber scales having drab tips, giving the insect a hoary grey appearance ; at the base is a rhomboid mark, more or less intense, streaky, and having its outer edge darkest ; the costa is streaked throughout with oblique lines, those on the apical half alternately broad and narrow, the broad ones being produced, some of them uniting into a streak running down the apical margin ; the apical spot distinct. In the centre of the wing is an oblong patch, and above it a number of longitudinal streaks ; the dorsal margin faintly streaked transversely. The ocelloid patch is indicated at the anal angle by two pale lustrous leaden-coloured streaks, divided broadly by an umber cloud, bearing the usual longitudinal black lines. Apical scales alternated broadly with drab and umber, with pale bases and greyish tips. Cilia alternated in same way, but paler, and both becoming whitish at, and darker again beyond, the anal angle. Posterior wings clothed with coarse pale fuscous scales, on a pale grey ground, becoming darker at the apex. Marginal scales pale fuscous, with still paler bases. Cilia whitish, with a pale fuscous tinge. Abdomen and caudal tuft pale fuscous, the latter dull. ♀ Exp. al. 6-8 lin.

This is a common insect in some places, and does not vary : it is very like the grey specimens of *L. nisella*, but *always wants the coloured blotch on the dorsal margin* ; it is also *larger* in size. Wood's figure (Ind. Ent. pl. 32. fig. 946) is a good representation of this insect. This species, when viewed very obliquely, nearly in a plane level with the surface of the wings, shows a beautiful iridescence of a delicate violet colour. By some persons this insect is thought to be only a variety of the preceding ; but Mr. Foxcroft, whilst collecting at Rannock, took hundreds of *L. cinerana*, and not a specimen among them which could be referred to *L. nisella*, or to any of its varieties.

The imago appears in July and August, amongst Poplars and Aspens, in the metropolitan district, in the west of England, and in Scotland.

3. *nisella*, Clerck. Alis anticis griseis; lineis obliquis cinereis nigrisque costalibus; margine dorsali macula trigona nigra vel saturate fusca; posticis fuscis, apice saturatoribus. ♂ Exp. al. 6-6½ lin.

Head fuscous, mixed with drab scales. Face darker. Eyes black. Palpi longer than the head, dark drab or brown, paler beneath. Antennæ cinereous. Thorax and patagia fuscous, mixed with drab scales. Anterior wings dull, drab, obliquely streaked with fuscous lines, and a broad triangular fuscous patch upon the dorsal margin; costa beyond the middle distinctly geminated, a fuscous spot at the apex; the ocelloid patch with a leaden-lustred border. Apical scales dull, fuscous, with drab bases. Cilia dull, paler than the apical scales. Posterior wings fuscous, darker at the apex. Marginal scales fuscous, with drab bases. Cilia drab, with a fuscous tinge. Abdomen fuscous; the caudal tuft paler. ♀ Exp. al. 6-6½ lin.

This richly-coloured and variable insect is not very common, although in some seasons it may be taken in plenty. The varieties are, *inter se*, tolerably constant, the named ones being *L. Bæberana* (that described above), *L. Pavonana*, *L. rhombifasciana*, *L. petrana* (*cuspidana* of Haw. and Stephens), and *L. stictana*.

- L. pavonana* differs from the type (*Bæberana*) in being less strongly marked, and in having the dorsal blotch shorter, rounder on its inner edge, and of a darker colour, approaching plum-colour.
- L. rhombifasciana* has an irregular rhombiform, dark-coloured patch at the base of the anterior wings; the dorsal blotch is ferruginous.
- L. petrana*, Hub. (*cuspidana* of Haw. and Stephens), has also a dark grey streaky patch at the base of rhomboid form, with a similar coloured, but rather paler cloud at the apex, the middle portion of the wing being rich ochreous.
- L. stictana*: the ground colour of the anterior wings is of an ochreous red, with the base slightly darker, and a few streaks scattered over the surface.

The imago appears in July and August throughout the metropolitan district, also in the north and west of England, the different varieties occurring at the same time and places.

The larvæ are to be found in the catkins of Sallows and Poplars.

4. *Penkleriana*, Schiff. Alis anticis albidis aut cinereis; macula basi fascia apiceque rufis aut ferrugineis; macula ocellari ad angulum analem subplumbea lincolis atris longitudinalibus; posticis fuscis, apice saturatoribus. ♂ Exp. al. 6-6½ lin.

Head fuscous, paler behind. Face pale fuscous. Eyes intense

purplish brown, with a velvety appearance. Palpi drab at base above, grey at the apex and beneath. Antennæ brown. Thorax fuscous, with a reddish gloss. Patagia same colour as the thorax, dull at the base, the apex shining. Anterior wings glossy cream-colour, with fuscous brown and brick-red markings, with a pale blotch on the dorsal margin. The base is occupied by a patch, extending one-third the length of the dorsal margin, from which it proceeds with a slightly oblique, nearly straight edge, to the middle of the wing; at the dorsal margin and external edge its colour is umber-brown, becoming paler towards the base and the costa. At the centre of the costa commences a deep ferruginous brown fascia, which attains the anal angle, dilating inwardly along the dorsal margin; the costal fold is dull drab, marked with oblique brown streaks. Beyond the central fascia the wing is suffused, and streaked with deep ferruginous brown, somewhat paler. On the apical portion of the costa are four cream-coloured geminations, all directed to a point in the apical margin below the spot at the apex. The ocelloid patch is suffused in its upper and lower edges with dull leaden brown, and at its sides with somewhat lustrous golden clouds; the centre brown, bearing from three to five longitudinal black streaks; the dorsal blotch is streaked with brown. Apical scales deep brown, with pale bases. Cilia iron-grey, with occasional streaks of brown, becoming fuscous at the anal angle, and iron-grey beyond it; the apical scales and cilia both interrupted by a cream-coloured streak below the apical spot. Posterior wings glossy, deep brown, darkest at the apex, clothed with coarse scales. Marginal scales deep brown, with pale bases. Cilia shining, pale grey, with a fuscous tinge. Abdomen fuscous; the caudal tuft dull drab. ♀ Exp. al. 6-7 lin. Marked like the ♂; in colour a trifle more sombre.

Like the preceding species, very variable, both in the colour and in the intensity of its markings: it is somewhat similar in appearance to *Anticlea trimaculana*, but is readily separable from it by a light-coloured mark in the middle of the dorsal margin, by the basal patch being abbreviated, and not attaining the costa, and by its straight posterior edge. Some of the paler specimens are, however, more like *Anchylopera Mitterbacheriana*, with which it is sometimes confounded; but this latter species does not vary, and has the apical portion of the wings more evenly coloured than is the case with *L. Penkleriana*.

The imago appears commonly among Oaks, Alder, Hazel, especially the latter, in June and July. It occurs throughout the south of England, in Cheshire, and at Belfast in Ireland.

Genus VIII. **PHLÆODES**, GUENÉE.

Palpi longer than the head, clothed with scales, especially above and beneath at the apex of the middle joint; basal joint drooping, stout, pyriform, truncate; apical slender, obovate, acute at the apex, not so long as the basal; middle stout, curved, ascending, thickest towards the apex, nearly four times as long as the apical. Maxillæ as long as the palpi. Thorax stout, subglobose. Anterior wings: *length equals three times* the width; costa arcuated, folded to the middle in the ♂; apex obtuse; apical margin concave; dorsal margin slightly rounded. The discoidal cell extends three-fifths along the wing; the costal vein does not extend beyond the fold; the subcostal nervures remote and equidistant. In some instances the subcostal vein divides, and forms a loop before the insertion of the second subcostal nervure. Posterior wings somewhat acute at the apex; apical margin concave. The median vein furcate at the apex. Abdomen tufted at the apex in the ♂, stout, and not tufted in the ♀.

In this genus there are at present only four British species, and one or two others are known upon the Continent. The perfect insects are of moderate dimensions, and tolerably uniform in size, but are variable in colour. In structural details they offer but little disparity to the preceding group. In repose the wings are much deflexed, but not held close to the sides of the abdomen.

The four species above alluded to may be thus arranged:—

- A. Anterior wings with brown or blackish markings, and a *pale blotch* on the dorsal margin, and another at the anal angle Species 1-3
- B. Anterior wings with the *blotch of various colours* (in different specimens) *produced, or extending along the dorsal margin* Species 4

1. **tetraquetrana**, Haw. Alis anticis griseis; fascia basi mediaque fuscis brunneo strigatis; costa strigis geminatis albidis; puncto apice subferrugineo, punctoque postico marginem dorsalem versus nigro; posticis fuscis. ♂ Exp. al. $6\frac{1}{2}$ —7 lin.

Head pale fuscous, paler behind. Face dull drab above, sometimes fuscous, whitish below. Eyes black. Palpi not so long as the head; above pale grey at the base, at the apex and beneath dark grey. Antennæ dark brown, alternated with grey; basal joint clothed with pale grey scales beneath. Thorax fuscous or dull brown. Patagia paler. Anterior wings pale drab, much streaked with dark brown, fasciated, and marked with fuscous. At the base is a fuscous patch, darkest posteriorly, and streaked with brown and drab, especially towards the dorsal margin; its hinder edge is angulated obtusely in

the middle, but is sometimes rounded. Beyond the basal patch the costal half of the wing is clouded with fuscous, and from the centre of the costa commences a broad fuscous, undefined fascia, which proceeds obliquely to the anal angle, before reaching which it encounters a dark brown spot on its outer edge. The costa is maculated throughout, but just before the central fascia, and beyond it, to the apex, the markings assume the form of pale geminated streaks, with dusky lines between, which are more or less produced towards the apical margin. At the apex is a distinct eye-like spot of dull ferruginous. The ocelloid patch is not clearly defined, of slightly shining grey colour, irrorated with dusky atoms; the pale portions of the wing streaked transversely with brown, more or less intense in different specimens. Apical scales (as well as the cilia) interrupted by a pale streak running through them below the apical spots, umber-brown, with drab bases. Cilia dark dusky brown, with drab bases, merging into drab at the anal angle, and dusky or iron-grey beyond it. Posterior wings pale fuscous, becoming darker at the margins. Marginal scales fuscous, with drab bases. Cilia very pale drab, becoming pale grey at the anal angle. Abdomen fuscous; the caudal tuft dull drab. ♀ Exp. al. $6\frac{1}{2}$ –7 lin. In general colour richer than the ♂.

A common species and variable, both in the ground-colour as well as in the markings of the anterior wings. Much resembling *Lith. nævana*, but readily *distinguishable by having a dark spot beyond the middle of the wing, nearer to the dorsal margin than to the costa.*

The imago appears in April and May in woods, in the south and west, and north-west, of England. It occurs also in Ireland and in Scotland.

The pupa is $3\frac{1}{2}$ lines long, very acute at the caudal extremity, of a pale reddish brown colour.

The larva feeds on the Birch and Alder: it is about 6 lines in length, with the head hazel colour, shining, and diaphanous, palest in front. The shield also hazel colour, darkest behind; the body bright yellowish green, with oval whitish elevated spots, and two black points in each, marking the insertion of hairs. The anal segment with a round, white, opaque plate with a few punctures on the surface.

2. *immundana*, Fisch. v. R. Alis anticis albidis, aut fuscis; fascia basi triquetra cinereo-fusca, punctoque postico brunneo marginem costalem versus; posticis fuscis apice saturatoribus. ♂ Exp. al. 6 – $6\frac{1}{2}$ lin.

Head dull brown. Face dusky brown above, white below. Eyes black. Palpi above and at sides fuscous; beneath, at base drab, at

apex dark grey. Antennæ fuscous. Thorax dull brown, darker behind. Patagia dull brown at base, tips paler. Anterior wings dull pale drab, with umber brown and golden brown markings; at the base is a large umber patch, streaky and paler inwardly, and extending one-third along the dorsal margin; its posterior edge sharply defined, directed obliquely outwards to the middle of the wing, where it encounters a brown cloud, which suffuses the whole of the costal portion of the wing. From the middle of the costa proceeds an undefined, broad, oblique, brown fascia to the anal angle, before attaining which, it is, in some specimens, slightly interrupted. This fascia, in conjunction with the basal patch, encloses a pale trigonate space on the dorsal margin, spotted and streaked transversely with brown, especially on the margin itself. The costa is streaked throughout, geminated in the apical portion. The apical spot is distinct, and sometimes there is a drab-coloured streak beneath it, which runs through the apical scales and the cilia. The ocelloid patch is small, and not clearly defined; it usually is in the form of a pale space, enclosing two curved, slightly lustrous streaks, clouded between with brown. Apical scales intense brown, with pale bases, and sometimes tipped with grey. Cilia smoky black, speckled with brown, becoming paler at the anal angle, and iron-grey beyond it; their bases grey. Posterior wings clothed with coarse rich brown scales, deepest at the apex. Marginal scales fuscous, with straw-coloured bases. Cilia dull pale fuscous. Abdomen dull fuscous, the caudal tuft slightly paler. ♀ Exp. al. 6-6½ lin. Markings as in the ♂, but slightly more distinct. Posterior wings pale fuscous, darkening towards the apex.

Very nearly allied to *P. tetraquetra*, but smaller, and usually darker in colour; *the anterior wings are narrower, and the patch at the base more sharply angulated in the middle; the spot beyond the middle is less distinct, but in the same situation as in P. tetraquetra.*

The imago appears in April and May, and again in August and September, among Birches, but far from common. It occurs around London, at the New Forest, New Brighton, and the west of England, and in Scotland.

According to M. Guenée, the pupa is to be found in a soft cocoon, above the earth. On the dorsum it is rufous, beneath luteous, with the anal termination quadrate, as in *Diloba cæruleocephala*. He also describes the larva as of a greenish grey colour, with the head testaceous: it feeds on the leaves of *Betula Alba*, rolling them up strongly into a cylinder, by silken threads.

3. *Demarniana*, Fisch. v. R. Alis anticis albis; fascia basi media apiceque fuscis obscuris; macula ocellari ad angulum analem rotundata alba; capite albido; posticis fuscis. ♂ Exp. al. 7 lin.

Head and face pale drab. Eyes black. Palpi above and at the sides slightly grey, whitish beneath. Antennæ dull brown. Thorax dull brown. Patagia drab, with a dark brown mark on the shoulder. Anterior wings glossy white, with umber markings; at the base is a streaky patch, extending one-third along the costa and the same distance along the dorsal margin; its posterior edge is oblique from the costa to the fold, *there* forming an angle, and attains the dorsal margin in a nearly straight line; an oblique fascia extends from the costa to the anal angle, with both its edges much angulated. The costa is streaked throughout, and beyond the central fascia are five geminations, all directed to a point below the apical spot, which is distinct, and has a white line below it, running through the apical scales and cilia. Below the costa, from the basal patch to the apex the wing is clouded with dark brown or fuscous. The ocelloid patch is reniform, being impinged upon by a projecting angle of the central fascia, of white colour, with a transverse streak of brown running through, which is more or less marked with longitudinal lines; the dorsal white blotch streaked with umber. Apical scales umber, with white bases. Cilia shining brown, with white bases, wholly white at the anal angle and iron-grey beyond it. Posterior wings clothed with fuscous scales on a white ground. Marginal scales fuscous, with straw-coloured bases. Cilia shining pale grey, the tips whitish. Abdomen fuscous; the caudal tuft at the apex drab. ♀ Exp. al. 6-7 lin.

This does not appear to be a variable species, and is rather uncommon: it is larger than its congeners, and *much resembles the pale forms of* *Lith. nævana*, but the white portions of the anterior wings are *much brighter*.

The imago appears in June and July, among Birches, at Darenth, Birch, West Wickham, and other woods; in Cheshire, &c.

4. *crenana*, Hub. Alis anticis nitidis; costa nigris, dorso albis; costa strigis geminatis cinereis; capite ochraceo; posticis nitidis, fusco-griseis, apice saturatoribus. ♂ Exp. al. $6\frac{1}{2}$ -8 lin.

Head dusky ochreous. Face smoky black. Eyes black. Palpi iron-grey; the apex dull brown. Antennæ black. Thorax and patagia smoky black, with two white spots behind on the former. Anterior wings glossy white on the dorsal margin and smoky black on the costa: these colours meet in the middle of the wing, and are bounded by an undulating edge from near the base to the apical margin, arching twice in its course, like *Anchylopora biarcuana*; the black colour is most intense at the middle of the wing, the remainder

being more or less freckled with shining iron-grey scales. The costa is maculated throughout, the markings towards the apex being geminated and of an obscure ochreous colour. The apical spot black and distinct; the white portion of the wing speckled with black. Apical scales ochreous drab, speckled with black. Cilia of same colour, but paler. Posterior wings: at base pale grey, softening into dilute umber at the margins. Marginal scales dilute umber. Cilia very pale straw-colour. Abdomen smoky brown; the caudal tuft dusky ochreous.

A very rare, and at the same time a very variable species; the dark or costal portion of the wing varies in intensity, *from chocolate to umber, and the dorsal portion from white to dark dusky grey, sometimes of an ochreous colour.* The instance above described has much the appearance of the *semifuscana* variety of *Pædisca piceana*.

The imago appears in March and April, and flies from 10 A.M. to 1 P.M. It was captured by Mr. T. Wilkinson of Scarborough (to whose kindness we are indebted for specimens of this insect), who took them near Scarborough among mixed growth; but they seem most attached to the Sallows.

“The larva is whitish, or pale green; the head pale brown. It feeds on Sallows and Willows.”—*Ent. Ann.* 1857, p. 119.

Genus IX. PÆDISCA, TREITS.

Palpi longer than the head, densely clothed with scales, especially at the apex of the middle joint. Basal joint drooping, curved, pyriform, truncate; apical slender, much longer than the basal, sub-cylindric; middle stout, club-shaped, thickest towards the apex, twice the length of the apical. Maxillæ longer than the palpi. Anterior wings: length equals three times the breadth. Costa arcuated; in the ♂ folded to the middle; apical margin truncate, oblique; dorsal margin rounded. The discoidal cell extends two-thirds across the wing. The costal vein reaches the costa considerably beyond the fold; subcostal nervures remote; the subcostal vein gives out a nervure midway between the first and second subcostal ones, which passes along the discoidal cell and attains the apical vein at the insertion of the second apical nervure. Posterior wings very broad; apex subacute; apical margin concave; dorsal margin entire. Abdomen slender, and tufted at the apex in the ♂, stout and obtuse at the apex in the ♀.

This is another genus much reduced in numbers, and the individuals comprised in it attain to dimensions beyond the average; some of them are subject to considerable variation in

their colours, and even in their markings, which formerly led to the amplification of species. The costa is much more arched than in *Phlæodes*. The wings are held in a deflexed position in repose.

The British species are four in number, and are arranged in the following order:—

- A. Anterior wings brown, with a *paler blotch* on the dorsal margin.
- a. With the blotch either *obsolete, nearly so, or distinct, and extending along the dorsal margin*. Species 1
- b. With the blotch *always nearly obsolete*. Species 2
- c. With the blotch *sometimes white, sometimes dark colour, and at others nearly obsolete*. Species 3
- B. Anterior wings black, with *no blotch* upon the dorsal margin Species 4

1. *Piceana*, Haw. Alis anticis subnitidis, piceis vel rufo-brunneis immaculatis; posticis pallide fusciscentibus. ♂ Exp. al. 8–9½ lin.

Head deep fuscous. Face darker than the head. Eyes black. Palpi longer than the head; above and at the sides, deep fuscous, drab beneath. Antennæ fuscous. Thorax and patagia deep fuscous. Anterior wings glossy, unicolorous, deep fuscous or reddish brown, and immaculate. Apical scales deep fuscous, darker than the wing, with the bases slightly paler. Cilia same colour as the wing. Posterior wings with a glossy, pearly lustre, in certain lights showing a pale reddish-brown tinge. Marginal scales very pale brown, the bases straw-colour. Cilia with a pale reddish-brown tinge. Abdomen fuscous; the caudal tuft dull ochreous drab. ♀ Exp. al. 8–9½ lin.

A common insect, and very variable in colour, which ranges from reddish brown to deep fuscous. The variation from the type may be ranged under the varieties *Sordidana* and *Semifuscana*. *P. sordidana* has the dorsal portion of the wing marked with deep fuscous, enclosing a blotch thereon.

P. semifuscana is well figured in Wood, pl. 34. fig. 1031; also in Stephens' 'Illust.' vol. iv. pl. 36. fig. 1. All the intermediate shades between this last and the typical insect occur.

The imago appears from June to September and October among Sallows and Willows, in marshy places; also among Alders. It occurs at the New Forest, and in the metropolitan district; also in the vicinity of Edinburgh.

The larva feeds on the leaves of various species of Sallow, *Salix capræa*, &c., and upon the catkins.

2. *stabilana*, Steph. MSS. Alis anticis pallide ferrugineis brunneo strigatis; margine dorsali macula trigona promiscue notata; posticis fusco-griseis. ♂ Exp. al. 10–11 lin.

Head fuscous, sometimes ferruginous. Face same colour as the head. Eyes deep brown. Palpi longer than the head, fuscous, sometimes ferruginous. Antennæ fuscous. Thorax and patagia ferruginous brown, the latter slightly darker. Anterior wings dull pale ferruginous, with umbrous markings and streaks; the costa marked throughout with pale geminations, the interspaces umbrous. On the dorsal margin, about one-third from the base, is an oblique umbrous streak, reaching half across the wing, most sharply defined posteriorly; towards the anal angle is another similar, but paler, less defined streak, meeting the preceding one, which together enclose a triangular space somewhat paler than the rest of the wing, which is finely streaked with umber. Apical scales and cilia dull fuscous, inclining to ferruginous, and slightly mixed with umber. Posterior wings dull pale fuscous; at the base grey. Marginal scales and cilia dull, the former fuscous, with the bases paler, the latter inclining to ochreous. Abdomen glossy, dull drab; the caudal tuft slightly ochreous. ♀ Exp. al. $10\frac{1}{2}$ – $11\frac{1}{2}$ lin.

Very closely allied to *P. solandriana*, but wanting the glossy appearance of the latter insect; it is somewhat larger, always of brown colour, varying but slightly *inter se*; the costa more rounded, particularly of the ♂, where the curve is not disturbed by the costal fold, and the dorsal blotch is only *slightly* paler than the ground-colour of the wing. The posterior wings are unicolorous, that is, *not slightly darker at the apex, as in Solandriana*.

3. *Solandriana*, Lin. Alis anticis pallidis, atomis minutissimis rufescentibus, macula oblonga undata brunneo-ferruginea ad marginem dorsalem; posticis fusco-griseis. ♂ Exp. al. 9–10 lin.

Head ochreous drab. Face slightly darker. Eyes intense brown. Palpi longer than the head above; at sides and beneath ochreous drab, paler between. Antennæ drab. Thorax and patagia drab, the latter slightly ochreous at the base. Anterior wings slightly glossy drab, with a broad deep ferruginous patch upon the dorsal margin; the costa and apical region slightly ochreous, and irrorated with dusky atoms. The dorsal patch occupies nearly the whole margin, is darkest on its anterior and posterior edges, and biarcuate on the edge towards the costa. Apical scales fuscous or ferruginous. Cilia paler. Posterior wings and marginal scales fuscous, the bases paler. Cilia straw-colour. Abdomen pale fuscous grey; the caudal tuft subochreous. ♀ Exp. al. 10 – $10\frac{1}{2}$ lin.

A very common insect, tolerably constant in size, but exceed-

ingly variable in colour. In some specimens the anterior wings are of the various shades of brown, with a white blotch; others as above described, and all the intermediate varieties occur.

The imago appears in June, July, and August, and occurs throughout the country, and in Scotland.

The pupa is 4 lines long, enclosed in a silken cocoon spun up in moss, &c.; is reddish brown at its anterior portion. The abdomen pale dusky brown.

The larva feeds on the Birch, Hazel, Sallow, and Willow; those feeding on the Birch roll the leaves into a cylinder at right angles to the midrib, and eat the internal portion. It is of a dirty white colour, with a slight shade of green; is about 8 lines long, with a black, shining head; the shield also black, divided by a pale dorsal line; on the anal segment is a large, irregular, semilunate black patch, with an oval spot of same colour on the 12th segment. The spots on the body elevated, oval, and colourous.

4. *ophthalmicana*, Hub. Alis anticis nigris nebulis atris; maculis duabus in margine dorsali, una basim versus atra, altera ad angulum analem atroque ferruginea; posticis fuscis. ♂ Exp. al. 10–11 lin.

Head smoky black or obscure ochreous brown; the scales of the tuft tipped with grey. Face smoky black. Eyes black. Palpi longer than the head; above, at sides, and beneath, smoky black; between dull ashy grey; terminal joint black. Antennæ smoky black. Thorax smoky black; the tips of the scales grey, sometimes wholly obscure ochreous brown. Patagia smoky black at the base; the apex with the tips of the scales grey. Anterior wings slightly glossy; smoky black, with glossy leaden grey streaks at the anal angle and along the costa, which is obscurely marked with geminated streaks: these streaks are sometimes of an obscure ochreous colour, at others dark leaden grey. The apical spot is distinct, and streaky. On the dorsal margin near the base is an irregular black blotch, tinged with obscure ochreous, and within the anal angle, near the margin, is a roundish obscure ochreous spot, edged with black. Apical scales smoky black, with drab bases and grey tips. Cilia glossy smoky black at and below the apex, then paler, becoming drab at the anal angle, with pale grey tips. Posterior wings glossy pale amber, darkest towards the margins. Marginal scales amber, with pale bases. Cilia very pale grey, with a fuscous tinge. Abdomen glossy pale grey; the caudal tuft greyish drab. ♀ Exp. al. 10½–12 lin.

Not a common insect: variable in the intensity of colour on the anterior wings, and also a little as to size. In general appearance it resembles dark specimens of *Retinia occultana*, but

is at once distinguished from that species by the less fasciated markings, and the presence of the ochreous or reddish spot towards the anal angle.

The imago appears from the end of July to September, and occurs in the south of England, and in the Midland Counties. It frequents Poplars and Aspens.

GENUS X. CATOPTRIA, GUENÉE.

Palpi longer than the head, densely clothed with slender scales. Basal joint drooping, stout, pyriform, truncate; apical longer than the basal, slender, subcylindric; middle ascending, stout, curved, thickest beyond the middle, three times as long as the apical. Maxillæ short. Thorax ovate, not crested behind. Anterior wings: length exceeds twice the width. Costa regularly arcuated; in the ♂ folded at the base; apex acute, produced; apical margin concave; dorsal margin slightly rounded. The discoidal cell reaches three-fifths across the wing. The subcostal nervures are remote, and between the first and second is given out an internal nervure, which passes along the discoidal cell to the apical vein, which it attains close to the second apical nervure. Posterior wings very broad; apex obtuse; apical margin concave. The median vein sometimes simple and sometimes furcate at the apex. Abdomen slender and tufted in the ♂, stouter in the ♀.

The insects comprised in this genus are very variable as to size, some of the species attaining dimensions equal to the *Padisca*, and others are very much smaller; they are not, however, liable to much variation as to colour or marking. When at rest, the wings are deflected, with the sides rounded as if enveloping the insect. The larvæ may all be said to be internal feeders, but their habits are very little known.

There are six British species, which are thus tabulated:—

- | | |
|--|-------------|
| A. Anterior wings with a fulvous, fuscous, or dusky patch at the base on the dorsal margin | Species 1-3 |
| B. Anterior wings without a patch at the base on the dorsal margin | Species 4-5 |
| C. Anterior wings with the dorsal margin paler than the costa | Species 6 |

1. *Scopoliana*, Haw. Alis anticis basi marginis dorsalis fulvis, lineis longitudinalibus nebulisque cinereo-fuscis; costa strigis obliquis nitidis; macula ocellari argentea lineolis atris; posticis griseo-fuscis paululum saturatioribus. ♂ Exp. al. 8-8½ lin.

Head rich buff colour, inclining to ferruginous. Face paler. Eyes

black. Palpi longer than the head; above, cream-colour; at sides and beneath drab, between whitish. Antennæ glossy pale fuscous. Thorax buff; streaked longitudinally with iron-grey or pale dusky. Patagia buff-ferruginous. Anterior wings glossy, very pale drab, with fuscous and pale chestnut-brown markings, arranged somewhat longitudinally in streaks. The base of the wing is clouded with buff. In the middle of the dorsal margin is a pale patch, irrorated with iron-grey, preceded by three pale chestnut longitudinal streaks diminishing in colour towards the base; posterior to the dorsal patch are one or two other, but faint brown streaks. The ocelloid patch is distinct, with a pale lustrous border, broadest anteriorly, and enclosing two (seldom three) longitudinal black lines on a pale ground. At the centre of the costa is an oblique pale fuscous streak, which is produced to the middle of the apical margin, arching over the ocelloid patch; beyond this streak are four very pale drab or buff geminations, with pale fuscous interstices. Apical scales and cilia very pale drab. Posterior wings fuscous, palest at the base. Marginal scales fuscous, with narrow drab bases. Cilia dirty white, glossy. Abdomen glossy, fuscous; the apex drab. ♀ Exp. al. $9\frac{1}{2}$ –10 lin. Anterior wings more suffused and darker than in the ♂, the streaky appearance more apparent.

Less abundant than the *C. Hohenwarthiana*, but far from uncommon: it is larger than that species, particularly the ♀.

The imago appears in June and July among Thistles; is distributed throughout the country, and occurs also in Scotland.

According to M. Guenée, the larva is yellowish-white, and lives in the heads of Thistles—feeding on the seeds—and sometimes it burrows into the root, where it changes into pupa.

2. *fulvana*, Steph. Alis anticis subfulvis, *maris* pone medium strigis numerosis obliquis costalibus; macula subocellari subargentea, punctis atris; posticis pallide fuscis, margine saturatoribus.
♂ Exp. al. 10–10 $\frac{1}{2}$ lin.

Head and face pale drab. Eyes intensely brown. Palpi longer than the head; pale drab, with a few darker, somewhat ochreous scales at the sides. Antennæ dusky drab. Thorax and patagia pale drab, with a slight ochreous tinge. Anterior wings dull, buff or pale ochreous, with slightly darker clouds, and pale lustrous streaks, beyond the middle on the costa. The dorsal half of the wing is clouded with pale dusky ferruginous, with a slightly paler irrorated patch in the middle of the dorsal margin. The ocelloid patch is distinct, with a pale slightly lustrous border, broadest anteriorly; the space enclosed is pale drab, marked with three interrupted longitudinal black lines. The costa is scarcely maculated to the middle; beyond are six or seven produced pale lustrous geminations, with the interspaces first fuscous, then buff towards the apex: these gemina-

tions become simple, and are produced obliquely to a point in the margin below the apex. Apical scales drab, the cilia paler, both inclining to ferruginous towards the apex. Posterior wings and marginal scales pale fuscous, the bases of the latter drab. Cilia grey, palest at and towards the apex. Abdomen glossy grey; the apex drab. ♀ Exp. al. 10–10½ lin. Anterior wings darker than in the ♂, arising from a streaky irroration of iron-grey scales, and the costa is streaked throughout.

In the Museum Catalogue this species is merged into *C. Hohenwarthiana*, although formerly considered distinct; and we think, after a careful investigation of a series of both species, it should be restored: hence its insertion here. It differs from *C. Hohenwarthiana* in being a larger, paler, and plainer insect in both sexes, and is tolerably constant.

The imago appears in August, and occurs in the same localities as the preceding, particularly at Headley Lane near Mickleham, but less commonly.

3. *Hohenwarthiana*, Schiff. Alis anticis cinereis, basi medioque fusco-rufis, macula dorsali angulari cinereis, ultima lineolis atris; costa pone medium strigis fuscis albidisque obliquis; posticis griseis; apice fuscescentibus. ♂ Exp. al. 8½–9 lin.

Head drab, sometimes approaching pale ferruginous, palest on the vertex. Face paler. Eyes black. Palpi longer than the head; above cream-colour; at the sides and between greyish or drab; beneath drab. Antennæ fuscous. Thorax and patagia pale ochreous drab, sometimes approaching pale ferruginous. Anterior wings glossy ochreous drab, with pale fuscous clouds, and slightly lustrous drab streaks on the costa beyond the middle. At the middle of the dorsal margin is a pale oblique blotch, streaked or irrorated with iron-grey, preceded towards the base by a darkish cloud, which softens as it recedes. At the anal angle is a distinct ocelloid patch, which is large, oval, and bounded by a dull leaden-lustred border, broadest anteriorly; the enclosed space drab, and bearing three interrupted longitudinal black lines. Before the middle the costa is pale drab, and scarcely maculated; beyond are five lustrous drab, produced geminations, with dark fuscous interspaces; the geminations become simple, and are then directed to a point in the margin below the apex. Apical scales drab, mixed with black, and inclining to ferruginous towards the apex. Cilia paler. Posterior wings and marginal scales grey, the latter with drab bases. Cilia drab, with a leaden gloss. Abdomen glossy grey; the apex drab. ♀ Exp. al. 7–9 lin. Anterior wings darker, but marked like the ♂, and the costa is streaked throughout.

A very common insect, varying in size and colour. It is

closely allied to *C. Scopoliana*, but is usually somewhat smaller, and mostly without the pale ferruginous patch which is present in the latter species towards the base in the dorsal margin.

The imago appears in July and August among Thistles, and occurs throughout the metropolitan district, and other parts of England; it likewise occurs in the vicinity of Dublin.

4. *parvulana*, Wilkinson MSS. Alis anticis nitidis, fuscis; strigis costalibus albidis geminatis; macula ocellari lincis longitudinalibus atris; posticis fuscis. Exp. al. $5\frac{1}{2}$ lin.

Head drab. Face paler. Eyes intense brown. Palpi drab above, the sides slightly dusky. Antennæ fuscous. Thorax and patagia pale fuscous, mixed with drab. Anterior wings glossy fuscous, with drab streaks; tolerably uniform in colour, but slightly darker at the apical region. On the costa beyond the fold are five shining drab geminations, the last of which is whitest and most produced, all directed to a point midway down the apical margin. The ocelloid patch is small, distinct, oval, drab, shining, and with longitudinal black lines within. Apical scales with the bases whitish; the middles fuscous, and the apices grey. Cilia shining fuscous; in some lights iron-grey. Posterior wings fuscous. Marginal scales and cilia drab. Abdomen fuscous; the caudal tuft drab. ♀ Exp. al. $5\frac{1}{2}$ –6 lin. Resembles the ♂, with the markings somewhat more distinct.

This species was captured by Mr. Bond last summer (1857) in the Isle of Wight among mixed herbage. It is the smallest known species in this genus, and in appearance resembles *C. cæcimaculana*, but its colouring is more evenly disposed, and is scarcely more than half the size.

5. *cæcimaculana*, Hub. Alis anticis albidis fusco multi-strigatis; macula dorsali et ad angulum analem dilutioribus; costa strigis albidis geminatis; posticis cinereis. ♀ Exp. al. $8\frac{1}{2}$ – $10\frac{1}{2}$ lin.

Head and face yellowish drab. Eyes intense brown. Palpi longer than the head; above, beneath, and between, drab; at the sides, with the base and apex, dusky. Antennæ drab. Thorax and patagia drab, streaked with fuscous. Anterior wings dull drab, densely clouded, and streaked with fuscous, sometimes with an ochreous tinge; the costa pale umber. On the dorsal margin is an indistinct pale patch, in form somewhat like the "bird's-head" mark in *Pæcilochroma corticana*. At the anal angle the ocelloid patch is large, but of irregular and undefined figure; pale anteriorly; its borders slightly lustrous, and the longitudinal black lines are very sparingly indicated. On the costa are about seven pale drab lustrous geminations, widening as they approach the apex; the interspaces pale umber. The geminations beyond the middle become simple, and are

produced into oblique streaks, directed to a point in the apical margin below the apex. Apical scales drab, thickly speckled and black. Cilia drab. Posterior wings with a subdued gloss, fuscous, and a greyish tinge, palest at the base. Marginal scales fuscous, the bases drab. Cilia drab, with a fuscous tinge. Abdomen fuscous; the apex yellowish drab. ♀ Exp. al. $8\frac{1}{2}$ – $10\frac{1}{2}$ lin.

Not very commonly distributed; varies in size and colour, and is abundantly distinct from any of the preceding. In dimensions it approaches nearest to *C. Scopoliiana*, but is darker, and more speckly in its markings. The nearly total absence of longitudinal markings in the ocelloid patch is the best character by which to distinguish it from its allies.

The imago appears in July and August among mixed herbage, mostly upon the chalk. It occurs rather commonly at Headley Lane, Mickleham; also in Sussex.

6. *expallidana*, Haw. Alis anticis ad costam rufo-fulvis; margine dorsali pallide ochraceis; macula ocellari subargentea lineolis atris; posticis fusco-griseis. ♂ Exp. al. $7\frac{1}{2}$ – $8\frac{1}{2}$ lin.

Head slightly ochreous on the vertex and behind; pale yellow in front. Face whitish. Eyes black. Palpi as long as the head, drab, at the sides inclining to grey. Antennæ pale fuscous. Thorax and patagia pale ochreous, sometimes primrose colour. Anterior wings dull; pale ferruginous brown on the costal, and pale ochreous yellow or primrose on the dorsal half. The costa is ochreous towards the apex, and is marked with geminations before and beyond the middle; those towards the apex being produced and slightly lustrous; the line of demarcation between the dark- and light-coloured portions proceeds straight to near the middle, then arches slightly, but broadly, finally encountering the ocelloid patch, which is of moderate size, of primrose colour, and with a pale brassy lustred border, and two longitudinal black lines within. A few small dusky marks are sometimes visible on the extreme dorsal margin. Apical scales pale ochreous, mixed with dusky scales. Cilia pale ochreous or primrose, paler at the anal angle. Posterior wings grey, with a violet tinge at the base, merging into pale fuscous at the margins. Marginal scales dusky ochreous, with pale bases. Cilia drab. Abdomen fuscous; the apex pale ochreous.

Not a common species, tolerably constant in size and colours, considerably smaller than *C. Scopoliiana*, and distinguished from the rest of the genus by the pale dorsal portion of the anterior wings.

The imago appears in July flying at sunset on grassy banks, and among clover. It occurs near London, also in Gloucestershire and Worcestershire. This species comes to light.

GENUS XI. HALONOTA, STEPHENS.

Palpi slightly longer than the head. Middle joint densely clothed with scales, partly enveloping the apical one. Basal joint drooping, stout, pyriform, truncate; apical slender, subcylindric, much longer than the basal; middle ascending, moderately stout, curved, thickest beyond the centre; twice as long as the apical joint. Maxillæ longer than the palpi. Thorax robust, ovate, sometimes crested. Anterior wings: the length equals twice the width. Costa slightly arched beyond the fold in the ♂, and regularly so in the ♀. Apex obtuse. Apical margin concave; dorsal margin slightly rounded. The costal vein does not extend beyond the fold. The discoidal cell proceeds two-thirds along the wing; subcostal nervures equidistant. Posterior wings: ample, acute at the apex; apical margin concave; dorsal margin entire. Abdomen in the ♂ slender, and tufted at the apex; stouter and obtuse in the ♀.

Formerly a genus of much larger extent than at present, owing to the structural details not being sufficiently observed, although still containing many species, forming a very natural group. Their dimensions are very varied, are mostly of dark colours, and for the most part having a pale blotch (sometimes more than one) on the dorsal margin. The larvæ are chiefly, if not wholly, internal feeders, living in the stems and roots of herbaceous plants; they are sluggish, stout, and of various colours.

The British species are nine in number, and are thus tabulated:—

- | | |
|---|-------------|
| A. Anterior wings with <i>two</i> distinct pale or <i>white</i> blotches on the dorsal margin | Species 1 |
| B. Anterior wings with <i>one</i> distinct pale or white blotch on the dorsal margin | Species 2 |
| <i>a.</i> With the blotch <i>irregularly quadrangular</i> | Species 2-6 |
| <i>b.</i> With the blotch <i>slender, produced, and angulated</i> | Species 9 |
| C. Anterior wings with the <i>blotch scarcely different</i> from the ground-colour of the wings | Species 7-8 |

1. **bimaculana**, Donovan. Alis anticis rufis brunneo-strigatis; maculis duabus rotundatis stramineis (Fœm. albis) pallide fusco-strigatis, quarum posticam format speculum angulo anali; posticis fusco-griseis. ♂ Exp. al. 8-10 lin.

Head and face deep umber. Eyes black. Palpi: above deep umber; at the sides rather paler, except at the apex; beneath and between obscure ochreous. Antennæ deep fuscous. Thorax and patagia deep umber; the latter with the apices cream-colour. Anterior wings dull; umber mixed with shades of brown, and two cream-coloured blotches on the dorsal margin. The dark portion of

the wing is chiefly deep umber mixed with streaks of chocolate brown towards the apex, and the whole superposed with obscure and slightly lustrous blue streaks; the apical half of the costa is marked with from four to five dusky pale geminated streaks, followed by the apical spot, which is distinct; at the middle of the dorsal margin is an irregularly angulated cream-coloured blotch, its outer edge streaked with chocolate brown, more or less distinctly. At the anal angle is a larger rounded blotch of a richer colour; this is the ocelloid patch, and consists of two broad pale and slightly lustrous streaks, with a fulvous cloud between. Apical scales umber, with cream-coloured bases. Cilia ferruginous brown, with the bases paler. Both the cilia and the apical scales become pale cream-colour at the anal angle. Posterior wings clothed with coarse dusky fuscous scales. Marginal scales fuscous grey, with pale grey bases. Cilia pale grey. Abdomen shining, fuscous grey; the caudal tuft ochreous drab. ♀ Exp. al. 8-10½ lin. The dorsal spots white or whitish.

By no means a common species. It varies a little, both in size and colour. Much resembles *Phlæodes Demarniana*, but is larger, and the posterior edge of the basal patch towards the dorsal margin is oblique, and directed towards the apex, whereas in *P. Demarniana* it is straight.

The imago appears from June to September among Oaks and in heathy places. It occurs throughout the metropolitan district, and is generally distributed over England. It has been taken also at Loch Messen, and in the vicinity of Edinburgh, but sparingly; and in Ireland.

2. *trigeminana*, Steph. Alis anticis fuscis, transverse undulato-strigatis; macula irregulari quadrata albida ad basim marginis dorsalis, medio altera majore; costa pone medium strigis geminatis albis; posticis fuscis; *fæm.* saturatoribus. ♂ Exp. al. 6-7 lin.

Head dull yellow, fuscous on the vertex. Face yellow, paler below. Eyes black. Palpi as long as the head; above, and at sides, yellowish at the base; fuscous at the apex; pale drab beneath; whitish between. Antennæ fuscous. Thorax and patagia fuscous, alternated with transverse bands of dull yellow. Anterior wings dull white, marked, fasciated, and streaked with rich golden-brown and lustrous markings. At the base are a few transverse abbreviated streaks of umber-colour, followed by an abbreviated fascia of golden brown, streaked with umber, commencing on the dorsal margin, and extending two-thirds across the wing in a straight direction towards the costa; its posterior margin undulated. From the centre of the costa to within the anal angle proceeds the central fascia, both edges angulated, of golden-brown colour, darkest towards its termination: this fascia and the basal markings, by their divergence, leave a

white space of irregular figure, more or less streaked with fuscous; the apical region suffused with fuscous. The costa before the middle is pale fuscous, with darker markings, and beyond is golden brown, with four shining white geminated streaks, which are produced into slightly violet lustrous markings; apical spot distinct, with a small white spot below it; below these is a golden-brown cloud. The ocelloid patch is distinct, of irregular figure; the two enclosed lustrous clouds are divided by a broad ochreous patch, streaked longitudinally with black; some white patches at the anal angle. Apical scales fuscous, with the bases and tips white. Cilia shining fuscous, slightly paler at the anal angle. Posterior wings pale fuscous, darker at the apex. Marginal scales and cilia fuscous grey, the latter slightly paler. Abdomen fuscous; the apex paler. ♀ Exp. al. 6-7½ lin. In colour much more beautiful and less suffused than the ♂; the golden brown is here of a rich purplish brown, and very glossy, the pale portions of the wing lustrous. The basal patch is continued to the costa; the central fascia dilated on the dorsal margin, and the space between losing the form of a blotch, and appearing as a pale fascia; the lustrous streaks below the apical costal markings more brilliant, as are also the lustrous markings of the ocelloid patch. Posterior wings darker.

This beautiful and distinct species is far from common, nor does it appear subject to variation. In size it resembles *H. tetragonana*, but is readily distinguishable from that species and its congeners by the *distinctly fasciated anterior wings, especially of the ♀*.

The imago appears in June and July, and is generally distributed throughout England. It occurs also in Scotland.

The larva is said to feed on the bark of the roots of Ragwort (*Senecio Jacobææ*).

3. *Cirsiana*, Zeller. Alis anticis brunneis obscuris; nebulis et strigis cinereis cæruleisque impositis; macula quadrata pallide flava medio marginis dorsalis; costa strigis geminatis albis; macula ocellari ad angulum analem albicante, punctis atris; posticis nigro-brunneis. ♂ Exp. al. 6½-8 lin.

Head deep umber; obscure ochreous behind and over the eyes. Face deep umber. Eyes black. Palpi as long as the head; deep umber; slightly paler beneath. Antennæ deep fuscous. Thorax deep umber, streaked transversely with dull ferruginous brown; the crest intense umber. Patagia dull ferruginous brown, and at the middle alternated with deep umber; the extreme apex drab. Anterior wings dull cream-colour; the whole wing, except the dorsal blotch, suffused with umber, chocolate, and ferruginous brown markings, the latter, at the apex, thickly superposed with lustrous blue dashes, especially before and beyond the middle; the base of the

costa is dusky brown, maculated with umber, and four, sometimes five, cream-coloured, geminated streaks, each blending, and produced into oblique lustrous blue lines, directed towards the apical margin; the apical spot distinct, with one or two cream-coloured spots below. The ocelloid patch is pale at the anal angle, large, oval, and distinct, consisting of two lustrous blue clouds, with a pale brown dash between, marked with three or four black dots or longitudinal stripes, edged inwardly with cream-colour. The dorsal patch irregularly quadrate, with one or more markings in the margin. Apical scales umber, tipped with pale grey. Cilia smoky black, alternated with ochreous before the middle of the margin, and ochreous, mixed with iron-grey, at the anal angle. Posterior wings pale umber. Marginal scales darker, with straw-coloured bases. Cilia fuscous, with the bases and apices straw-colour. Abdomen umber; the caudal tuft ochreous drab. ♀ Exp. al. $6\frac{1}{2}$ –8 lin. Marked as the ♂, but the ground-colour paler, and the speckling of the markings more distinct.

Not an uncommon insect, but tolerably constant in size and colour. Very like *H. scutulana*, and scarcely distinguishable from it, except that its dimensions are much smaller.

The imago appears in June and July, and occurs throughout the country; also in the vicinity of Dublin.

The pupa is $4\frac{1}{2}$ lines in length, of a dark brown colour, and remains in this state about three weeks.

The larva lives in the stems of Thistles (*Cirsium palustre*), and of *Centaurea nigra*, feeding upon the pith. It is somewhat smaller than the larva of *H. scutulana*, but not otherwise distinguishable from it. When about to assume the pupa state, it spins a cocoon of white silk, mixed with the *débris* of the pith of the food-plant, first gnawing a hole through the stem to effect its exit. It lives through the winter, and changes to the pupa about May.

4. *scutulana*, Schiff. Alis anticis brunneis obscuris, nebulis cinereis cœruleisque impositis; in medio marginis dorsalis macula quadrata pallide flava; costa strigis geminatis albidis; macula ocellari ad angulum analem albicante, punctis atris; posticis nigro-brunneis. ♂ Exp. al. $7\frac{1}{2}$ –9 lin.

Head deep rusty brown, inclining to ochreous behind the eyes. Face slightly darker than the head. Eyes black. Palpi as long as the head; above and at sides dark fuscous; beneath and between dull drab. Antennæ dark fuscous. Thorax umber, streaked transversely with obscure ochreous-brown. Patagia obscure ochreous-brown at the base, alternated with umber; the tips dark drab. Anterior wings dull cream-colour; the whole of the wing, except the costal streaks, ocelloid patch and dorsal blotch, suffused with intensely dark markings, chiefly in shades of brown. At the base,

extending one-third along the costa, and rather more along the dorsal margin, is a transversely streaked patch, with an undulated sharply-defined edge; its colour umber on a deep fuscous ground, and speckled with cream-colour in the middle. From the middle of the costa, and joining to the basal patch, proceeds a broad, similarly-coloured oblique central fascia (discernible only in certain lights), terminating within the anal angle; its edges not sharply defined, and before attaining the dorsal margin it encounters a conspicuous and irregularly-formed black spot with a pale border. The apical region is clouded with ferruginous brown and fuscous, and the costa is marked with four cream-coloured geminated streaks before the apical spot, which is distinct, and below it are a few cream-coloured freckles; the costal streaks blend and merge into lustrous blue oblique lines, and below them is a curved row of black spots, which is continued down the middle of the ocelloid patch: this latter is large, oval, and distinct, formed of two lustrous blue clouds, and the aforesaid black spots, which are edged with white. The dorsal blotch is of irregular shape, and marked with two or more black spots or streaks upon the margin. A few faintly lustrous dull dark blue dashes, especially on the costa and towards the apex. Apical scales umber, with whitish tips. Cilia: at the apex umber, then ochreous, becoming paler at the anal angle. Posterior wings and marginal scales dark fuscous; the latter with straw-coloured bases. Cilia straw-colour, with the middle pale fuscous. Abdomen with the caudal tuft ochreous. ♀ Exp. al. 9 lin. Marked like the ♂, but much darker in colour, and the light parts of a paler tinge.

A common species, and varies both in size and colour, but not very materially. It is scarcely separable from *H. cirsiana*, except that it is always larger. The *Ephippiphora novana* of M. Guenée appears to be a large variety of the ♂ of this species: it expands 10 lines, is more acute at the apex of the anterior wings, and paler on the dorsal margin, where there are two large, distinct, pale rounded blotches, one in the middle, the other at the anal angle; this latter is in fact the ocelloid patch, and is marked transversely with three or four black spots, or short longitudinal streaks. Fig. 902 of pl. 31, in Wood's 'Index Entomologicus,' represents this variety.

The imago appears in June and July, and is generally distributed throughout England and the south of Scotland; also in the vicinity of Dublin.

The pupa is 5 lines in length, of a dark brown colour, and remains in this state about three weeks.

The larva feeds in the stems of Thistles, and may be found in the pith throughout the winter and spring, up to April and May, when it goes into pupa; it forms a rough cocoon of the

gnawed pith and white silk. In its younger states it feeds in a kind of covered way; when full grown it is 7 lines long, of a bright pink colour, paler beneath. The head is black, heart-shaped, shining. The shield, black, shining, with the fore margin pale, divided by a dorsal line. The anal segment has a black, shining, oval plate, and six elevated spots preceding it. The intervening segments each with eight brown, oval, shining, elevated spots, each bearing a single hair springing from their centres.

5. *Brunnichiana*, Schiff. Alis anticis cinereo-fulvis nebulosis; macula media marginis dorsalis trigona straminea; costa strigis geminatis albicantibus; posticis nigro-brunneis. ♂ Ex. al. 7-9 lin.

Head fuscous, paler behind. Face paler than the head. Eyes black. Palpi tawny, slightly paler beneath. Antennæ fuscous. Thorax and patagia dull brown, with an ochreous tinge; the latter slightly paler at the apex. Anterior wings dull, cream-colour. The whole of the wing, except the costal markings and the dorsal blotch, suffused with dull ochreous, mottled with fuscous; at the base the costa is alternated with dull ochreous and fuscous, and beyond the middle it is marked with four cream-coloured geminated streaks, with lustrous blue wavy lines below them. The apical spot is distinct, and below it are one or two cream-coloured marks. The dorsal blotch is cream-colour; its anterior margin sharply defined, and its posterior edge somewhat angulated, and usually with a faint mark on the margin. Between this blotch and the ocelloid patch is a dark liturated spot; the ocelloid patch itself is oval and distinct, consisting of two pale lustrous blue clouds, with a row of black spots between, on a pale ground. Apical scales mottled brown, with ochreous tips. Cilia ochreous, slightly paler at the anal angle. Posterior wings and marginal scales rich purplish brown; the bases of the latter straw-colour. Cilia rich straw-colour. Abdomen umber, the caudal tuft ochreous. ♀ Exp. al. 8-9 lin. In colour somewhat darker than the ♂, and with the markings assuming a more decided character.

A very common insect, variable in size, and particularly in the intensity of the colour of the anterior wings. Its ordinary dimensions are those of *H. cirsiana*, and the colour ranges from pale drab to fuscous. It resembles *H. tetragonana*, but is larger, usually paler in the anterior wings, and the blotch on the dorsal margin larger and more quadrate. The variety *quadrana* is the ordinary Scotch form of this insect, which is usually smaller, and always much darker than the deep-coloured English specimens.

The imago appears from June to August, commonly among Coltsfoot (*Tussilago Farfara*), and also in other places where that

plant does not grow. It is generally distributed throughout England and Scotland; it occurs also in Ireland.

The larva feeds in the flower-stems of the Coltsfoot.

6. *tetragonana*, Steph. Alis anticis fusco-nigris brunneo-nebulosis; postice plumbeo vel cæruleo variis; macula medio marginis dorsalis subquadrata alba; posticis fuscis. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head fuscous. Face slightly paler below. Eyes black. Palpi longer than the head; above and beneath drab, at base; the apex grey; sides grey. Antennæ fuscous; basal joint clothed beneath with light-coloured shining scales. Thorax and patagia fuscous, slightly glossy; the latter paler at the apex. Anterior wings glossy, with a white dorsal patch, the remainder of the wing suffused with dark brown and still darker streaks and lustrous blue markings. The base is occupied by a dark brown patch (dull fuscous at its origin), streaked transversely, and most intense on its posterior edge, which is angulated in the middle; it extends one-third along the costa, and two-fifths along the dorsal margin. At the middle of the costa commences the central fascia; it is narrow at its origin, and somewhat curved in form; its edges indistinct, and dilates on the dorsal margin towards the base. The apical spot is preceded by four geminated streaks upon the costa; below these the wing is streaked longitudinally with intense brown, mixed with lustrous blue and red-orange markings. The ocelloid patch formed of two lustrous blue clouds, with black spots edged with orange, between. The dorsal blotch maculated on the margin with fuscous. Apical scales umber. Cilia dusky brown. Posterior wings deep reddish brown. Marginal scales reddish brown. Cilia dark grey. Abdomen fuscous.

A rather uncommon species, and not subject to variation; in general appearance it much resembles *H. cirsiiana*, but is smaller; the dorsal blotch is not so prominent, and more triangular. It is the same size as *H. trigeminana*.

The imago appears in July, and occurs throughout England, and also in the vicinity of Edinburgh.

The larva is from 6 to $6\frac{1}{2}$ lines in length, and may be found in the autumn, full-fed, under moss on the boles of beech-trees in a loose cocoon. In colour it is pale drab, or dirty white, with the spots slightly darker. Head deep hazel-colour. Shield yellowish. It hibernates and goes into pupa in the spring.

7. *turbidana*, Treit. Alis anticis cinereo-fuscis; brunneo-nebulosis; costa strigis geminatis cinereis; posticis fuscis. ♂ Exp. al. 10 lin.

Head tawny drab. Face paler. Eyes black, shining. Palpi long as the head, fuscous, darkest at the apex. Antennæ fuscous. Thorax drab. Patagia drab, sometimes tawny, or dull ochreous. Anterior

wings drab, or pale fuscous, marked and streaked with fuscous. At the base, and extending one-third along the dorsal margin, is a streaky patch, with its edge oblique, directed towards the apex and towards the costa, softening off into the ground-colour of the wing; within the anal angle is a large, somewhat acutely triangular blotch, of the same colour as the basal patch. The folded part of the costa is dusky, and beyond the middle are five geminated streaks, which are more or less produced; the apical spot is distinct, and in the apical angle is a curved fuscous cloud. The ocelloid patch is dusky, with a brown streak maculated with brown running through it. The pale portions of the wing are thickly streaked with dusky, short, wavy, transverse lines. Apical scales and cilia fuscous and drab, speckled with darker brown. Posterior wings clothed with fuscous scales, darkest at the apex. Marginal scales fuscous, with straw-coloured bases. Cilia pale fuscous, with whitish tips. Abdomen shining, dark fuscous, the caudal tuft slightly ochreous. ♀ Exp. al. 11 lin. In colour darker and more suffused than the ♂.

This species is still somewhat rare in cabinets: it was first introduced into the British list by Mr. R. F. Logan (*vide Zool. p. 2034*), where it is figured and described. In size it varies considerably, the ♀ attaining the dimensions of *H. fænella*: in colour it mostly resembles *H. Brunnichiana*, but without the pale dorsal blotch. It likewise is very similar to *H. inopiana*, but is darker coloured, and of larger size.

The imago appears in June and July flying among the Butter Burr (*Tussilago Petasites*), in the stems or roots of which plant the larva probably feeds. It has been taken in Devonshire, at Carlisle, and the north of England; also in the vicinity of Edinburgh. It flies at from four to five o'clock P.M.; the ♀ however is mostly at rest; they secrete themselves in the dead leaves.

8. *inopiana*, Haw. Alis anticis ochraceo-rufescentibus, fusco-subreticulatis; posticis fusco-cinereis. ♂ Exp. al. 9 lin.

Head tawny. Face slightly paler. Eyes black. Palpi longer than the head. Antennæ drab. Thorax tawny, the crest bifid. Patagia tawny, irrorated with brown scales. Anterior wings dull, tawny, irrorated throughout with dusky brown scales. The costal and dorsal margins (especially the former) finely maculated with brown. Apical scales tawny, irrorated with brown. Cilia paler. Posterior wings grey, clothed with coarse fuscous scales. Marginal scales fuscous, with paler bases. Cilia pale grey, with a fuscous tinge. Abdomen fuscous, with a large ochreous tuft at the apex. ♀ Exp. al. 9-10 lin.

Still rare in cabinets, although a common insect in some places among Fleabane (*Inula dysenterica*). It is tolerably con-

stant in size and colour. It is most nearly allied to *H. turbidana*, but smaller, and never so darkly coloured.

The imago appears in July, and occurs in the west and south-west of England, New Forest, near Folkestone, Dover, and Deal; at Darenth, Ripley, and a few other places; but always attached to the above-named plant, in the roots or stems of which the larva is supposed to feed.

9. *fœnella*, Linn. Alis anticis obscure brunneo-fuscis, postica ad angulum analem cinerea, macula dorsali tibialiformi alba; posticis fuscis. ♂ Exp. al. $10\frac{1}{2}$ –11 lin.

Head drabby brown. Face paler above, white below. Eyes black, sometimes purplish brown. Palpi as long as the head, drab above, beneath and between, darker at the sides. Antennæ dull fuscous, paler beneath; the basal joint is clothed with shining scales. Thorax fuscous, the crest rich chocolate. Patagia same colour as the thorax, but slightly paler at the base. Anterior wings rich chocolate-brown, with an immaculate white, curved marking on the dorsal margin, in shape like a bird's head and neck, with the beak towards the apex. The wing towards the costa is greyish; the costa itself chocolate, and streaked throughout, the streaks beyond the middle being geminated; the apical spot distinct. The ocelloid patch is of irregular shape, edged inwardly with white, and consisting of two lustrous leaden-coloured clouds with a yellowish streak between, on which are several black spots with pale borders. Apical scales iron-grey, darkest at the apex, tipped with white. Cilia fuscous, speckled with white, and becoming paler towards the anal angle. Posterior wings glossy, rich golden brown. Marginal scales of same colour, with the bases straw-colour. Cilia pale fuscous, the bases dull straw-colour. Abdomen fuscous, the caudal tuft rich brown. ♀ Exp. al. 10–13 lin. In colour paler than the ♂, especially along the costal portion of the wing.

Not of very frequent occurrence; variable in size, but tolerably constant in colour and markings. In some instances the pale blotch is suffused with fuscous, so as to be but slightly discernible from the rest of the wing. Distinguished from its congeners by the shape of the dorsal blotch.

The imago appears in June and July; occurring in England in the South and Midland Counties; also in Norfolk and Cambridge.

The pupa is 6 lines long; in shape compressed from the sides, and somewhat isometric. The head, thorax, and wing-cases shining, smooth, and black, the pale marks of the anterior wings distinctly seen through the latter; the abdominal portion pale hazel on the ventral, and deep red-brown on the dorsal surface;

the anal extremity armed with coarse, deep, chestnut-coloured hooklets. This state continues about three weeks.

The larva when full-grown is from 7 to 8 lines in length, of a yellowish white colour. The head is heart-shaped, dark chestnut-brown, and shining; the shield diaphanous, hazel-colour, shining, divided by a pale dorsal line, on each side of which, near the base, is a darker undefined patch. The anal segment is suddenly attenuated, and bears a hazel-brown cloud. Spiracula dark brown. It feeds in the stems of the Mugwort (*Artemisia vulgaris*). The young larva apparently enters the stems about 3 inches from the ground, eating its way downwards into the root, where it is found during the winter and spring months up to April and May, when it goes into pupa.

Genus XII. DICRORAMPHA, GUENÉE.

Palpi longer than the head, remote, porrected horizontally; clothed with *very long* hairy scales at the apex of the middle joint. Basal joint short, moderately stout. Apical, very slender and acute, twice as long as the basal. Middle, *very* stout, slightly curved, thickest beyond the centre, *not* twice as long as the apical. Maxillæ as long as the palpi. Thorax slender, ovate. Anterior wings: length greater than twice the width; costal fold reaching to the middle; costa arcuated; apex obtuse; apical and dorsal margins rounded. The costal vein reaches to the end of the fold. The subcostal vein gives out an internal nervure between the first and second subcostal nervures, which crosses the discoidal cell, and joins the apical vein opposite the first apical nervure. Posterior wings ample; apex obtuse; apical margin slightly concave. Abdomen tufted in the ♂, stouter in the ♀.

This is a very extensive genus, and hitherto a most difficult one to arrange, arising from several of the species previously located in it being so very similar to each other as to render their discrimination almost impossible; but which (*senectana* and *satur-nana*), according to the present classification, belong to another family, and are consequently removed, leaving this group much more congruous and natural. The species, as now recognized, may always be known by a tooth-shaped dorsal blotch, of varied size and colour (usually yellow), sometimes very distinct, at others scarcely visible. The perfect insects fly about in the sunshine, and some of them are of common occurrence. In the larva state they present several points of affinity to the *Halonota*; probably the whole of them live in the roots of herbaceous plants.

The British species are nine in number (several more are recognized on the Continent), and are arranged as in the following table :—

- | | |
|--|--------------|
| A. Anterior wings with a pale sulphur-coloured, curved tooth-shaped blotch on the dorsal margin | Species 1 |
| B. Anterior wings with a pale sulphur-coloured, triangular blotch on the dorsal margin | Species 2 |
| C. Anterior wings with a rich yellow (sometimes dusky) tooth-shaped blotch on the dorsal margin | Species 3, 4 |
| D. Anterior wings with an indistinct triangular, or curved tooth-shaped blotch on the dorsal margin, slightly paler than the rest of the wing ; never yellow or sulphur-coloured | Species 5-9 |

1. *Petiverella*, Linn. *Alis anticis aureo-brunneis, fusco-strigatis, macula dorsali curva flava, strigulis costalibus geminatis albidis ; ad angulum analem punctis atris ; posticis aureo-fuscis.* ♂ Exp. al. $4\frac{1}{4}$ - $6\frac{1}{2}$ lin.

Head dusky olive-brown. Face slightly paler. Eyes black. Palpi longer than the head ; apex smoky grey, or dull brown ; bases, sides, and beneath, dull ochreous. Antennæ glossy, fuscous. Thorax pale, dull olive-brown. Patagia of same colour, but paler at the apex. Anterior wings : pale olive-brown, with an ashy tinge, especially at the base ; the dorsal margin with a curved tooth-shaped sulphur-coloured blotch, its apex turned posteriorly ; the costa with similar coloured streaks beyond the middle, which are mostly geminated, but sometimes simple ; below them are two oblique bright lustrous blue lines. The subapical portion of the disk sometimes clouded, or streaked with ochreous, either with or without black spots or longitudinal black stripes therein. On the apical margin, towards the anal angle, are three or four black spots, edged anteriorly with ochreous. Apical scales short, and smoky grey. Cilia glossy, dark grey or brown, with yellowish bases. Posterior wings glossy, golden brown or coppery, darkest towards the margin, and bordered narrowly with yellow at the apex. Marginal scales iron-grey, with yellow bases. Cilia grey at the apex (paler anteriorly), with paler bases. Abdomen fuscous, the caudal tuft dusky drab. ♀ Exp. al. 5 - $6\frac{1}{2}$ lin.

An abundant species ; variable in size, and a little so in colour. Allied to *D. sequana*, but is larger, and the *pale dorsal blotch is more crescent-shaped, and narrower.*

The imago appears in June and July, flying in the sunshine, wherever the food-plant of the larva grows. It is generally distributed over the country, and occurs also in Scotland and Ireland.

The larva is from 4 to 5 lines long, of sluggish habit, and of a pinkish-white colour. The head is luteous, shining, and the

sutures chestnut-brown. The shield broad, shining, very transparent, with several small blackish clouds thereon. The anal segment slightly constricted. It is to be found in the roots of the Yarrow (*Achillea Millefolium*) during the autumn, living therein in the larva state till the following April, and is exceedingly abundant.

2. *sequana*, Hub. Alis anticis aureo-brunneis, fusco strigatis, macula magna trigona dorsali sulphurea; strigulis costalibus geminatis albidis; posticis aureo-fuscis. ♂ Exp. al. $4\frac{1}{2}$ – $5\frac{1}{2}$ lin.

Head dusky drab, pale yellow behind the eyes. Face slightly paler than the head, below. Eyes dull black. Palpi longer than the head, pale yellow at the sides, base, and beneath; the tips broadly fuscous. Antennæ glossy grey. Thorax dark dusky drab. Patagia dark dusky drab, with the apex speckled with pale ochreous. Anterior wings pale umber, irrorated with ochreous scales towards the apex; the base and below the costal fold freckled with cream-colour, and a large cream- or sulphur-coloured dorsal patch, with its anterior margin sharply defined, and nearly straight; its apex truncate, and posterior margin angulated. The costa is streaked throughout; the streaks *on* the fold *dusky*, those *beyond* the middle *cream-colour*, and somewhat geminated; the two anterior ones produced into lustrous blue streaks, one attaining the apical margin below the apex, the other dilating into an indistinct lustrous cloud between the dorsal blotch and the black dots (varying from two to five in number) upon the apical margin. Apical scales umber. Cilia glossy brown or iron-grey, with yellowish bases, both interrupted by a cream-coloured streak through them, below the apical spot. Posterior wings and marginal scales fuscous; the latter with yellowish bases, and the former with a cream-coloured edge at the apex. Cilia pale fuscous, with paler bases. Abdomen fuscous, the caudal tuft slightly paler. ♀ Exp. al. $4\frac{1}{2}$ – $5\frac{1}{2}$ lin.

An uncommon species; tolerably constant in size and colour. Allied to *D. Petiverella*, but smaller, and having the *dorsal blotch shorter, wider, with its apex truncate*. The anterior wings are also broader.

The imago appears in June, flying at midday in grassy places. It occurs in Norfolk, Gloucestershire, Devonshire, near Croydon, and other places in the metropolitan district.

3. *politana*, Schiff. Alis anticis ochreis, olivaceo-fusco variis; macula margine dorsali indistincta et irregulari; strigis costalibus geminatis albidis margine apicali punctis tribus atris; posticis atro-fuliginosis. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head dusky ochreous, paler behind the eyes. Face paler. Eyes

black. Palpi longer than the head, pale ochreous above and at the sides, the apex grey; cream-colour beneath and between. Antennæ fuscous. Thorax greyish ochreous, and glossy. Patagia greyish ochreous at the base; the apex brighter and glossy. Anterior wings rich ochre-colour, inclining to pale ferruginous, clouded or streaked with grey, with an iridescent olive-green in some directions, and crimson in others; an immaculate dorsal blotch of the ground-colour of the wing, tooth-shaped, and with the point directed towards the apex. Costa beyond the middle marked with five oblique, geminated, produced streaks, cream-coloured with dusky interspaces; below are faint indications of lustrous blue streaks; the apical spot bright ochreous, and below it a pale streak which is produced through the marginal scales and cilia. On the apical margin are three black dots. Apical scales iron-grey, somewhat mottled towards the anal angle. Cilia fuscous grey, with pale bases. Posterior wings and marginal scales purplish brown; the latter with yellowish bases. Cilia glossy, straw-colour. Abdomen shining, fuscous, with a pale grey tuft at the apex. ♀ Exp. al. $6\frac{1}{2}$ –7 lin.

A rather common species; constant in size, but somewhat variable in colour. Of the size of *D. Petiverella*, but with the anterior wings narrower.

The imago appears in June in grassy places, occasionally in company with *D. Petiverella*. It occurs throughout the metropolitan district, in Yorkshire, Cheshire, &c.

4. *alpinana*, Treit. Alis anticis flavis, olivaceo-fusco variis; macula margine dorsali lata et distincta; strigis costalibus productis flavis; margine apicali punctis tribus atris; posticis aureo-fuscis.
♂ Exp. al. 7–7 $\frac{1}{2}$ lin.

Head dusky ochreous. Face pale drab. Eyes dark brown. Palpi longer than the head; above dusky ochreous; at the sides, and beneath, pale drab, with the apex dusky. Antennæ fuscous. Thorax olive-brown, with a greenish iridescence. Patagia: at the base and apex ochreous, in the middle dusky. Anterior wings glossy, bright yellow, clouded and streaked with palish olive-brown, which in certain lights has a greenish appearance. On the dorsal margin is a largish curved blotch of the ground-colour, with its apex acute, and anterior edge rounded; posteriorly it is somewhat concave, and gives out fine streaks of the same colour in the direction of the apical margin. The costa is obliquely geminated with yellow markings, one of which *at*, and another *beyond*, the middle, are much produced and dilated, and have a black line running along them. The streak at the middle, in conjunction with the dorsal blotch, form an angulated dilating fascia. The apex and apical margin yellow. Towards the anal angle are three black spots. Apical scales glossy, umbreous. Cilia shining, brown, with a slight violet-tinge. Posterior wings and

marginal scales glossy, golden brown; the latter with their bases dusky drab. Cilia drab, with a dusky line running round the middle. Legs pale fuscous, and straw-colour. Abdomen glossy, pale fuscous; the caudal tuft drab. ♀ Exp. al. 7 lin. Marked like, but in colour slightly darker than, the ♂.

5. *simpliciana*, Haw. Alis anticis cinereo-fuscis, maculis nebulisque fuscis; macula margine dorsali indistincta et triangulari; strigulis costalibus pallidis; posticis fuscis. ♂ Exp. al. 6-7 lin.

Head and face dusky drab. Eyes black. Palpi longer than the head; dull ochreous at the base, sides, and beneath. Antennæ dusky drab, glossy, paler beneath; broadly dusky drab at the apex. Thorax and patagia dusky drab; the latter slightly paler at the apex. Anterior wings dull, dusky drab, with a paler tint along the costa, with a large, irregularly-trigonal dorsal blotch, slightly paler than the general colour, and most clearly defined at its anterior edge. The costa beyond the middle is marked with pale, oblique, geminated, produced streaks, and clear brown interspaces. The apical spot large, but not conspicuous. Three black dots in the middle of the apical margin. Apical scales chocolate-brown. Cilia glossy, pale brown, paler bases, both interrupted beneath the apex by a streak running through them. Posterior wings and marginal scales fuscous; darkest at the apex. Cilia glossy, fuscous grey. Abdomen fuscous grey, with a paler caudal tuft. ♀ Exp. al. $6\frac{1}{2}$ - $7\frac{1}{2}$ lin.

Not a common species; tolerably constant in size and colour. This is one of a group of insects which are exceedingly difficult to make out. It is allied to *D. Tanaceti*, *saturnana*, and *plumbagana*. From *Tanaceti* it may be distinguished by the costa not being so distinctly marked, and the *entire absence of slightly lusted streaks and markings on the disk*; from *saturnana* by its *somewhat smaller size, paler colour, and obvious, though obscure, blotch on the dorsal margin, and the absence of metallic marks*; and from *plumbagana* by the *same characters as from saturnana*.

The imago appears in June and July among Mugwort (*Artemisia vulgaris*), and occurs wherever that plant grows in plenty. It has been captured at Charlton, Greenhithe, Northfleet, and Margate, near Dover, in Kent, near Croydon, and other places round London; also in Worcestershire, Cheshire, &c.

The pupa measures 4 lines in length, and is of a pale testaceous brown.

The larva feeds in the roots of *Artemisia vulgaris*, living therein throughout the winter, and assumes the pupa state about the month of April. It is of a yellowish-white colour, with a hazel-coloured head.

6. **Tanaceti**, Sta. Alis anticis sub-nitidis, brunneis; squamis ochraceis irroratis; pone medium strigis obsoletis plumbeis; macula margine dorsali trigona, dilutiori et indistincta; posticis fusco-griseis. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head olive-drab, palest behind and on the vertex. Face slightly paler. Eyes black. Palpi longer than the head; at the base ochreous; the apex dusky brown. Antennæ glossy, fuscous. Thorax olive-drab. Patagia slightly paler. Anterior wings slightly glossy, with a general irroration of ochreous scales on a dusky or pale umber ground, and a somewhat paler indistinct trigonate blotch (sometimes streaky) on the dorsal margin. On the costa are seven geminations, not produced; the interspaces fuscous; in the apical region are faint indications of lustrous streaks and spots. Apical scales umbreous. Cilia very glossy, fuscous; the bases broadly ochreous. Posterior wings grey, with a fuscous tinge. Marginal scales umber, with pale narrow bases. Cilia pale fuscous, with drab bases. Abdomen glossy blackish; the apex drab. ♀ Exp. al. $6\frac{1}{2}$ –7 lin.

First introduced into the British list by Mr. Stainton, in the 'Entomologist's Annual' for 1857, p. 101, and is rare in cabinets, although it is probably mixed up with some of the closely-allied species. It mostly resembles *D. simpliciana* and *plumbagana*. It differs from the former in the *paler ground-colour of the anterior wings*, and in the *presence of small slightly metallic lustrous streaks and markings*, and the posterior wings are *much paler and fuscous grey*. From *plumbagana* it is most difficult to distinguish: in fact, it appears to us as doubtful if it be distinct from this latter species.

Taken by Mr. Thompson, of Crewe, among *Tanacetum vulgare*.

7. **plumbagana**, Treit. Alis anticis brunneis, squamis ochraceis irroratis; strigulis ad costam albidis micantibus; macula dorsali indistincta subplumbea; margine apicali punctis atris; posticis fuscis, vel brunneo-aureis. Exp. al. 6–7 $\frac{1}{2}$ lin.

Head olivaceous drab. Face slightly paler. Eyes purplish brown. Palpi longer than the head. Antennæ at the apex dusky, pale ochreous at the base. Thorax olivaceous drab. Patagia slightly paler, especially at the apex. Anterior wings dull pale umber, thickly irrorated with bright ochreous scales, with shining drab markings on the costa, and an indistinctly expressed triangulate, slightly lustrous blotch upon the dorsal margin. Towards the base, below the costal fold, are a few slightly shining leaden-lustrous spots, similar to the dorsal blotch. On the costa, before the middle, are two faintly-coloured geminations, and five beyond, well defined, bright, shining and produced into lustrous streaks: the first and second be-

yond the middle unite, and are continued obliquely to the ocelloid patch, which is of the same lustrous colour, and encloses some umbreous atoms; on the margin beyond the ocelloid patch is a row of black dots, varying in number from three to five, and differing in size. Apical scales very shining, deep cinereous. Cilia also very shining, and boldly expressed; their bases pale ochreous, and the tips broadly deep cinereous, paler at the anal angle. Posterior wings shining fuscous, with a golden-brown tinge, paler at the base, and the extreme margin pale ochreous. Marginal scales deep cinereous. Cilia drab, broadly pale, cinereous in the middle. ♀ Exp. al. 6-7½ lin. Marked like the ♂, but the colours more distinct, the umbreous ground-colour appearing in patches.

Not a very common species, nor does it appear liable to great variation. It very closely resembles *D. Tanaceti*, but the posterior wings in that species are *grey, not fuscous*, and the anterior wings have their *markings less distinctly defined*. It also resembles *D. acuminatana*, but may be separated from it by the anal angle of the anterior wings being *more produced*.

The imago appears in June, and is generally distributed throughout the country; it occurs also in Ireland.

8. *acuminatana*, Zell. Alis anticis nitidis, brunneis vel olivaceo-brunneis; squamis ochraceis irroratis; apice acuminato; macula magna margine dorsali, triangulari et dilutiori; margine apicali punctis atris; posticis nitidis, fusco-griseis. ♂ Exp. al. 5-6 lin.

Head and face dusky drab. Eyes black. Palpi longer than the head; above dusky; sides dusky, with an ochreous patch at the base; beneath drab; between shining drab. Antennæ fuscous. Thorax and patagia dusky brown. Anterior wings somewhat acuminate, glossy pale umber or olive-brown, with a general irroration of ochreous scales, and a large slightly paler streaky triangulate curved blotch in the dorsal margin; on the costa are seven geminations, sometimes obliquely produced into slightly lustrous streaks; at the apical margin is a row of black dots. Apical scales umbreous. Cilia very glossy, paler, with broad yellow bases. Posterior wings glossy grey, with a slight fuscous tinge, most visible at the apex, and a greenish-grey iridescence. Marginal scales fuscous, with drab bases. Cilia pale drab; the apices grey. Abdomen glossy, varying from fuscous to blackish; the apex drab. ♀ Exp. al. 5-5½ lin. Anterior wings darker; posterior wings more uniformly grey than in the ♂.

This is a common insect in some places, very like *D. simpliciana*, *senectana*, *Tanaceti*, *saturnana*, and *plumbagana*; but it is smaller in size, and distinguished by the more acute apex of the anterior wings.

The imago appears in August, in grassy places and among

mixed herbage, at Headley Lane, and other localities round London ; also towards the North of England.

9. *consortana*, Steph. MSS. Alis anticis brunneis ; strigis, macula elongata curva medio marginis dorsalis ; strigulis costalibus albidis ; margine apicali punctis atris ; posticis nitidis, basi griseis ; margine fuscis. ♂ Exp. al. $4\frac{1}{2}$ –5 lin.

Head fuscous. Face slightly paler. Eyes black. Palpi longer than the head ; pale drab at the base ; the apex fuscous. Antennæ fuscous. Thorax fuscous, mixed with drab. Patagia fuscous ; the apices drab. Anterior wings dull umber, with slender drab markings, and on the dorsal margin is an elongated curved blotch ; the base is occupied by a large streaky, indistinctly defined, rhomboid patch, extending one-third along the costa and dorsal margin, the angle in the middle reaching to the centre of the disk ; on the costa, which is dark umbreous, are six whitish, and produced, slightly lustrous streaks, the anterior three geminated, the remainder simple ; the umbreous interspaces produced obliquely towards the apical margin ; the curved blotch is streaked with blackish, and at the anal angle is a small indistinct ocelloid patch ; a row of black dots on the apical margin. Apical scales dark umbreous, sometimes interrupted below the apex. Cilia glossy umbreous, with the bases broadly pale drab. Posterior wings glossy grey at the base, softening into fuscous at the margins, darkest at the apex. Marginal scales darker fuscous, with glossy drab bases. Cilia : the apices grey, the bases pale drab. Abdomen blackish ; the apex drab. ♀ Exp. al. $4\frac{1}{2}$ –5 lin.

An uncommon insect ; the smallest British species of this genus, and although obscure in colour, it is very distinctly marked.

The imago appears in July and August, and is captured by sweeping grass and mixed herbage. It occurs at Headley Lane, on the tramway, near Croydon, in the North of England, &c.

Genus XIII. COCCYX, TREIT.

Palpi robust, scarcely longer than the head ; basal joint drooping, stout, pyriform, truncate ; apical obovate, slender, not so long as the basal ; middle moderately stout, ascending, not curved, scarcely thicker beyond the centre, more than three times as long as the apical. Maxillæ slender, longer than the palpi. Thorax robust, ovate, not tufted behind. Anterior wings : length more than twice the width ; costa slightly arched, the fold extending to the middle ;

apex acute; apical margin concave; dorsal margin nearly straight; the costal vein not reaching beyond the fold; the subcostal nervures equidistant. Posterior wings: apex acute and somewhat produced; apical margin concave; the submedian nervure inserted near the apex of the submedian vein. Abdomen stout; in the ♂ tufted at the apex.

Formerly of much greater extent, but now reduced to three British species. They are all of moderate dimensions; in repose they sit with the wings much deflexed, and the larvæ for the most part frequent fir-trees.

The British species are thus arranged:—

- A. Anterior wings with *two distinct pale fasciæ*.
 a. The pale fasciæ *broad and simple* Species 1
 b. The *pale fasciæ slender* and the *posterior one furcate*
 on the costa Species 2
 B. Anterior wings with *more than two distinct pale fasciæ*
 or strigæ, frequently interrupted Species 3

1. *finitimana*, Guen. MSS. Alis anticis subargenteis, fusco strigatis; macula basi rhombea, fascia media obliqua, altera ad apicem punctoque rotundato fuscis; posticis fusco-griseis. ♂ Exp. al. $5\frac{1}{2}$ lin.

Head fuscous. Face darker. Eyes black. Palpi as long as the head, whitish above; dark drab at the sides and beneath. Antennæ glossy fuscous. Thorax and patagia fuscous, the latter glossy at the apex. Anterior wings glossy dirty white, with rich bronzy brown markings, speckled with umber; at the base is a streaked and speckled rhomboid patch, palish at its origin, sharply defined at its posterior edge, extending nearly one-third along the costa, forming an angle towards the middle of the disk, and attaining the dorsal margin rather more than one-third from the base. At the middle of the costa commences a sharply-defined fascia, narrow at its origin and gradually dilating to the opposite margin; its anterior edge is nearly straight, but there is a sharp angle posteriorly. The apical region is occupied by a broad patch, streaked with white at the anal angle; on the costa beyond the middle are two geminations, followed by a simple streak, and this latter is succeeded by a third gemination, which is produced and curved, enclosing the apical spot. The pale portions of the wing have a silvery appearance, more or less speckled, especially on the dorsal margin. Apical scales umber. Cilia paler umber, with drab bases, both becoming lighter coloured towards the anal angle. Posterior wings glossy pale fuscous. Marginal scales slightly paler, with the bases yellowish. Cilia fuscous grey: Abdomen glossy fuscous, the apex drab. ♀ Exp. al. $5\frac{1}{2}$ lin.

A rare species in cabinets. It was first added to our list by the late Richard Weaver, who took it in Scotland; it has since been taken by other collectors.

2. *distinctana*, Bentley MSS. Alis anticis aureo-brunneis nebulis saturatoribus; ante medium striga, pone altera ad costam bifida, argenteis; posticis fuscis. ♂ Exp. al. $5\frac{1}{2}$ -6 lin.

Head drab, darker behind. Face drab, paler below. Eyes black. Palpi as long as the head; drab, with the bases inclining to ochreous. Antennæ pale fuscous, drab at the base. Thorax dusky drab. Patagia brownish at the base; at the apex drab. Anterior wings very pale drab, with a lustrous appearance, with broad patches, and fasciæ of rich golden brown, mixed with umber. At the base is a streaky patch, which extends one-third along the costa, palish towards its origin, with a sharply-defined border, slightly undulate and convex. At the middle of the costa commences a wide clearly-defined fascia, dilating at the centre, and attaining the dorsal margin, being twice as wide there as at its outset; its anterior edge indented towards the costa, and its posterior extending near to the anal angle. The apical region is occupied by a patch, more or less interrupted on the costa by pale produced streaks. The ground-colour of the wing appears between the principal markings in the form of two transverse silvery strigæ; one towards the base, simple, the other towards the apex, bifid on the costa. Apical scales dark umber, with paler bases. Cilia darkest towards the apex, fuscous, with broad shining drab bases. Posterior wings: surface clothed with coarse fuscous scales upon a whitish ground, gradually becoming darker to the apex. Marginal scales fuscous, the bases paler. Cilia dusky, inclining to straw-colour. Abdomen fuscous; the caudal tuft drab. ♀ Exp. al. $5\frac{1}{2}$ -6 lin.

This is a very distinct species, and has hitherto been mixed up in our cabinets as a variety of *C. Hyrciniana*, which it much resembles; it is, however, easily separable from it: *first*, by the anterior wing being less streaky; *secondly*, by the streaks themselves being more defined; *thirdly*, by the first two costal streaks *beyond the middle uniting* and being *produced uninterruptedly* to the anal angle. Fig. 14 of pl. 99, in Westwood and Humphrey's 'British Moths and their Transformations,' vol. ii., gives a good idea of this insect.

There is no recorded locality for the original specimen in the Bentleyan (Mr. Edwin Shepherd's) cabinet; but all the recent specimens that we have seen or heard of were taken by Messrs. Hodgkinson, Allis, and Gregson, from some Scotch fir-trees at Braithwaite, near Windermere.

3. **Hyraciniana**, Uslar. Alis anticis albidis aut fuscescentibus, subargenteo-nitidis, maculis fuscis plus minusve distinctis; posticis fuscis. ♂ Exp. al. 6 lin.

Head pale fuscous on the vertex, pale drab behind. Face cream-colour. Eyes black. Palpi as long as the head, pale drab. Antennæ shining, dusky drab. Thorax chocolate-brown speckled with drab. Patagia of similar colours, but paler. Anterior wings dull, cream-colour or white, suffused with dull or chocolate-brown patches or streaks. This insect is very variable in the number and extent of its markings; some with the white preponderating, others with the brown; the most constant markings appear in the darker specimens, and from one of these is the following description taken. The white ground-colour of the wing is visible near the base in an indistinct, broadish, undulating streak. Before the middle of the wing are two indistinct curved lines nearly parallel in their course, but widest apart in the centre; on the costa, midway between these lines, are two white spots, and below them numerous white freckles arranged in two rows, *one directed towards the base, the other to the anal angle*. Before the apex are two white geminated streaks with white freckles below. At the region of the ocelloid patch are two well-defined white lines, or else a congeries of white freckles. The apical spot distinct, and below it a white streak running through the cilia. Apical scales umber, with paler bases. Cilia smoky grey, with white bases; somewhat paler at the anal angle, where they are also sometimes interrupted by white streaks running through them. Posterior wings shining, pale fuscous; the base greyish. Marginal scales pale fuscous, with lighter bases. Cilia pale grey. Abdomen fuscous, the caudal tuft paler. ♀ Exp. al. $5\frac{1}{2}$ –6 lin.

A very common insect among fir-trees, and at the same time very variable, both in the number and character of its markings. It differs also somewhat in size. The dark portions of the anterior wings vary from pale fuscous to dark umbreous. It is similar to *C. distinctana*, but is readily distinguished from it by the *absence of the furcate striga beyond the middle of the wing*.

The imago appears in May and June, and occurs throughout the country; also in Scotland, commonly in the vicinity of Edinburgh.

Genus XIV. CAPUA, STEPHENS.

Palpi robust, longer than the head, porrected horizontally, densely clothed above with scales; basal joint stout, truncate; apical slender, slightly curved, longer than the basal; middle stout, thickened beyond the centre, three times as long as the apical. Maxillæ as long as the palpi. Thorax ovate. Anterior wings: length equals

twice the width. Costa arcuated. In the ♂ the fold scarcely reaching to the middle; apex acute; apical margin oblique, concave; dorsal margin rounded. In this genus the apical vein gives out five nervures, the first of which is furcate. Posterior wings: apex acute; apical margin concave. Abdomen slender, tufted in both sexes, but mostly so in the ♂.

This genus was established by the late J. F. Stephens for the reception of the only species which it contains, but it appears to us scarcely to offer sufficient distinctive characters on which to found a genus; but as it has figured as distinct, not only by the author quoted, but also by M. Guenée, under the name "*Teratodes*," it is thought better to retain it in that position. Further observations, as respects its larva and transformations, may show whether or not its claims to remain distinct can be maintained.

1. *ochraceana*, Steph. Alis anticis ochraceo-griseis, cinereo-fusco obsolete reticulatis, in medio fascia abbreviata indistincta; posticis nitidis, griseis. ♂ Exp. al. 6-6½ lin.

Head and face straw-colour. Eyes black. Palpi longer than the head, straw-colour. Antennæ slightly ochreous. Thorax and patagia straw-colour, sometimes irrorated with fuscous. Anterior wings dull, dusky straw-colour, with fuscous markings, forming a broad, undefined, oblique, irregular fascia before, and another paler, narrower one beyond, the middle; both most distinct towards the costa. The apical margin narrowly edged with fuscous. Apical scales dull, ochreous, with fuscous tips. Cilia ochreous. Posterior wings dull pale grey, with a slight fuscous tinge. Marginal scales grey, the bases pale ochreous. Cilia pale ochreous. Legs straw-colour. Abdomen fuscous, the caudal tuft ochreous. ♀ Exp. al. 6-6½ lin.

Not a very uncommon species. In appearance it much resembles dull specimens of *Dictyopteryx Læflingiana*, but the ♂ may be readily distinguished from it by the *folded costa*.

The imago appears in May and June, and occurs throughout the country.

The larva is attached to the Hornbeam.

Genus XV. CARTELLA, GUENÉE, olim.

Palpi twice the length of the head, remote, porrected horizontally, clothed with moderately long scales. Basal joint drooping, stout, pyriform, truncate; apical *club-shaped*, thickest towards the apex, longer than the basal; middle ascending, curved, club-shaped, mode-

rately stout, three times as long as the apical. Maxillæ not so long as the palpi. Thorax stout, ovate. Anterior wings: length nearly three times the width; costa arcuated, the costal fold extending to one-third from the base; apex acute; apical margin entire, oblique; dorsal margin rounded. The costal vein reaches to the middle of the costa; the subcostal nervures equidistant. Posterior wings acute at the apex; apical margin slightly concave. Abdomen slender, and tufted in the ♂; stout and obtuse at the apex in the ♀.

The only species at present forming this genus was formerly placed by the late J. F. Stephens, in his 'Illustrations,' amongst the *Hedya* (*Anticlea*), and subsequently by M. Guenée among *Pædisca* (with him synonymous with *Pæcilochroma*), a position which it certainly could not maintain; consequently Mr. Stephens, when compiling his Museum Catalogue of the British *Tortrices*, separated it, and assigned to it a previous name of Guenée's (*Cartella*), which is here adopted. The ground of separation was doubtless the folded costa.

1. *bilunana*, Haw. Alis anticis albis; cinereo- aut pallide fulvonebulosis; costa punctis nigris; maculis duabus nigris dorsalibus; posticis cinereo-fuscis. ♂ Exp. al. 7-8 lin.

Head and face yellowish white, sometimes cream-colour. Eyes black. Palpi: above dirty white, grey or dusky at the sides, white beneath and between. Antennæ dirty white above, fuscous beneath. Thorax and patagia chalk-white. Anterior wings chalk-white, with umber-brown markings in shades. The costa is widely streaked throughout with dilute umber, and in the centre is sometimes a suffused cloud, followed by a very faint indication of a fascia towards the anal angle. On the dorsal margin, one-third from the base, is an oblique mark, extending to the middle of the wing; its posterior edge undulated and concave, of intense umber, softening rapidly towards the base; near the anal angle is another mark, paler in colour, maculated with dark spots; a few dots and streaks are disposed over the surface and on the dorsal margin. In some specimens the disk is suffused with very dilute umber clouds. Apical scales and cilia white. Posterior wings pale fuscous, darkest at the apex. Marginal scales fuscous, with straw-coloured bases. Cilia varying from straw-colour to grey. Abdomen fuscous, the caudal tuft pale drab. ♀ Exp. al. 6-7½ lin.

This is rather a common species, but slightly variable in the intensity of its markings. Rather larger than *Hedya Paykulliana*, the typical form of which it much resembles. It is distinguished from it, however, by the paler ground-colour of the anterior wings, *the less distinct, irregular, and less produced*

marks upon the costa, and the white or cream-coloured head. In *H. Paykulliana* the head is pale grey.

The imago appears in June among Birches (Haworth says on the trunks of ash-trees). It occurs throughout the country.

The larva feeds in the catkins of the Birch.

FAMILY III. **ANCHYLOPERIDÆ.**

The insects contained in this group may be distinguished chiefly by the produced apex of the anterior wings. This character is most fully developed in *Anchylopera*, whilst in some of the genera this peculiarity is altogether wanting; but their affinity is maintained, at least so far as the existing knowledge of the family permits.

The anterior wings are usually longer and narrower than in the *Plicatæ*; the costa is neither folded nor obtusely rounded at the base, but always regularly arcuated (except *Anchylopera* pars, *Dictyopteryx*, and *Cræsia*).

In the larva state they feed mostly in united leaves: some few (*Hedya* pars, *Bactra*) are internal feeders; the former in the bark and twigs of Poplars, the latter in the stems and roots of Rushes.

This family consists of eight genera, which are tabulated in the following order:—

- A. Anterior wings with the apex *slightly produced*.
 - a. Palpi with the *middle joint three times as long* as the apical 2. STEGANOPTYCHA.
 - a a. Palpi with the *middle joint five times as long* as the apical 1. HEDYA.
- B. Anterior wings with the apex *much produced*.
 - b. Palpi with the *middle joint not three times as long* as the apical 6. DICTYOPTERYX, pars.
 - b b. Palpi with the *middle joint three times as long* as the apical 3. ANCHYLOPERA.
- C. Anterior wings with the apex *acute, but not produced*.
 - c. Palpi with the *middle joint not three times as long* as the apical 5. ARGYROTOZA.
 - c c. Palpi with the *middle joint three times as long* as the apical 4. BACTRA.

D. Anterior wings with the *apical margin truncate*.

d. Palpi with the *middle joint not three times as long* as the apical 6. DICTYOPTERYX, pars.

dd. Palpi with the *middle joint more than five times as long* as the apical 7. CRÆSIA.

E. Anterior wings with the *apex obtuse*, and the *apical margin rounded*.

e. Palpi with the *middle joint scarcely four times as long* as the apical 8. HEMEROSIA.

Genus I. HEDYA, HUB.

Palpi as long as the head; robust, porrected upwards, remote; clothed at the apex with fine scales. Basal joint stout, drooping, pyriform, truncate; apical minute, slender, obovate, shorter than the basal; middle not so stout as the basal, curved, ascending, five times as long as the apical. Maxillæ longer than the palpi. Thorax robust, ovate. Anterior wings: the length equals nearly three times the breadth (in *H. pauperana* more than three times); costa regularly arcuated; apex slightly produced; apical margin concave; dorsal margin rounded. The discoidal cell proceeds two-thirds across the wing, and receives from the subcostal vein a nervure, inserted between the first and second subcostal nervures (nearer the latter), which crosses the discoidal cell to the second apical nervure; subcostal nervures remote. Posterior wings: apex acute; apical margin concave; the median vein is furcate midway between the insertion of the super-median nervure and the margin. Abdomen slender, and tufted at the apex in the ♂; stout and obtuse in the ♀.

The insects associated under this name are mostly of very common occurrence, of moderate size (rather below the average), and distinguished by their white or whitish anterior wings, with defined dark markings; the most conspicuous of these latter is a patch at the base, which may be traced throughout nearly the whole of them. In the structure of the anterior wings the apex is *slightly produced*, thus approaching the *Anchylopera*. The larvæ are attached to the Elm, Poplar, Sallow, Willow, &c.

The British species amount to ten in number, and are arranged as in the following table:—

- | | |
|--|-------------|
| A. Anterior wings <i>without a dark-coloured patch</i> at the base | Species 1 |
| B. Anterior wings <i>with a dark-coloured patch</i> at the base, its posterior edge straight, rounded or very slightly angulated | Species 2-8 |

- C. Anterior wings with the basal patch very angulated or rhomboid.
- a. With a *plain pale-coloured angulated fascia* beyond the basal patch Species 9
- b. With the *pale angulated fascia beyond* the basal patch *streaked* Species 10

1. **Paykulliana**, Fabr. Alis anticis albis nigro nebulosis lineatis punctoque apice brunneo; lunula communi nigra, altera fusca; posticis fuscis. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head greyish drab. Face greyish drab above, dirty white below. Eyes black. Palpi: above, drab at the base, greyish drab at the apex and sides; beneath, drab at the base, dusky at the apex, whitish between. Antennæ: above, greyish drab, darker beneath. Thorax and patagia greyish drab, the latter paler and shining at the apex. Anterior wings dull, the costal portion drab, the dorsal grey, with chocolate-coloured markings; the costa marked throughout with oblique streaks, those on the apical half alternately broad and narrow, the broad ones produced, and directed to a point below the apical spot, which is distinct and well defined. The base is marked with small spots; towards the former, on the dorsal margin, is an irregular trigonate patch; its inner edge convex, the outer concave, and the apex produced; within the anal angle is another irregularly-shaped patch, with its apex turned towards the base. At the middle of the apical margin arises a third marking, somewhat hook-shaped; this, with the preceding one, is frequently of a much paler colour than the sub-basal dorsal patch, and between them are two lustrous leaden clouds, separated by a row of more or less distinct spots or longitudinal streaks, together forming the ocelloid patch; the pale portions of the wing clouded with pale fuscous and grey. Apical scales more or less intense, of chocolate-colour, with drab bases and whitish tips. Cilia dull, dusky brown, softening into pale bases with whitish tips, both becoming drab, or white, at the anal angle, and iron-grey beyond it. Posterior wings clothed with coarse fuscous scales, darkest towards the apex, on a pale-grey ground. Marginal scales fuscous, with paler bases. Cilia pale fuscous, and shining. Abdomen pale fuscous; the caudal tuft tawny. ♀ Exp. al. $6\frac{1}{2}$ –8 lin.

Far from uncommon, and varies considerably in size as well as colour. The variety *triquetrana* consists in having the dorsal half of the wing suffused with umber, of more or less intensity. The variety *costana* has the anterior wings very dark, with the costa broadly white. It has very much the appearance, in its typical form, of *Cartella bilunana*, but is readily distinguished from that species by its *pale grey head, more suffused anterior*.

wings, and the distinct and more regular geminations on the costa.

The imago appears in July, among Birches; in some seasons plentifully. We have found the dark variety as frequently as the typical insect, although Stephens says "the dark varieties are rare." Coombe, Darent, and Plumstead Woods are some of its localities near London. It occurs in Cheshire and in the midland counties, and towards the West of England. Scarce in the vicinity of Edinburgh.

The larva feeds on the Birch.

2. *ocellana*, Schiff. Alis anticis pallide-ochraceis aut albidis; fascia basi brunneo strigata; apiceque ante angulum analem maculis brunneis obscuris; macula ocellari strigis cæruleis; posticis fuscis.
♂ Exp. al. 6-6½ lin.

Head fuscous. Face darker than the head. Eyes black. Palpi fuscous, darker at the apex, paler between. Antennæ pale fuscous. Thorax deep fuscous, banded transversely with dusky grey. Patagia fuscous at the base; the apex paler. Anterior wings dull, rich cream-colour, with black, umber, deep fuscous, brown and greyish markings; at the base is a deep fuscous patch, streaked transversely with umber, its posterior edge variable, but usually angulated in the middle. Near the anal angle, on the dorsal margin, is a dull ochreous trigonate (sometimes rounded) patch, edged and marked with black; beyond this are two lustrous bright blue streaks, with a broad dull ochreous cloud between, streaked longitudinally or spotted with black or intense brown: these streaks or spots vary in number, from three to seven. The apical spot is brown and distinct, more or less produced downwards, along the margin; the costa is marked with broad and narrow alternated streaks of grey or fuscous colour, sometimes confined to the costa, at others, more or less produced across the wing, in wavy lines, of greater or less intensity. There are a few streaks on the dorsal margin. Apical scales smoky black, with ochreous bases and tips. Cilia smoky black, with whitish tips, becoming grey at the anal angle. Posterior wings clothed with coarse, dull, fuscous scales. Marginal scales fuscous, with cream-coloured bases. Cilia long, shining, and pale grey. Abdomen pale shining grey; the caudal tuft straw-colour. ♀ Exp. al. 6-8 lin. In general colour richer than the ♂, the cream-colour approaching buff, and usually less streaked. Abdomen dull fuscous.

An exceedingly common and very variable species, but fortunately not hampered with a host of named varieties. The variation consists in the central, usually pale, portion of the anterior wings, ranging through all the tints, from very pale drab- or cream-colour to a smoky-black; sometimes this part of the wing

is partially speckled, at others immaculate, or nearly so. The dark markings in some specimens are nearly homogeneous, in others they are very streaky.

The imago emerges in June and July, frequenting hedges and woods around London and throughout the country; rarer towards the North. It does not yet appear to have been captured in Scotland or in Ireland.

The larva feeds on the Hornbeam, Alder, Mountain Ash, &c., and probably on the Whitethorn. According to M. Guenée, the larva is similar to that of *Spilonota Roborana*, being brown, and having the head and shield black.

3. *simplana*, Fisch. v. R. Alis anticis olivaceo-albidis, basi fascia angulata brunneo strigata, medio costæ macula brunnea quadrata, alteraque ad marginem dorsalem dilutiori; costa punctis brunneis, apice strigato ciliis cinereis; posticis fuscis. ♂ Exp. al. $5\frac{1}{2}$ lin.

Head white, pale grey over the eyes. Face white. Eyes black. Palpi longer than the head, white; at the base inclining to fuscous. Antennæ fuscous. Thorax blackish, thickly mixed with white scales. Patagia blackish at the base, mixed with white at the apex. Anterior wings dull, whitish with umbreous markings, and towards the apex broadly clouded with pale greenish ochreous. At the base, extending one-fifth along the costa, and one-third along the dorsal margin, is a streaky patch, obtusely angulated towards the latter and most intensely coloured at its posterior edge; in the middle of the costa is an oblique quadrate patch, and on the opposite margin, but beyond, a more dilute streaky one, and sometimes between these, on the disk, are faint indications of clouds. The costa is distinctly spotted throughout with umber; at the apex, and at intervals along the apical margin, are several intense umbreous streaks. Apical scales pale umbreous, cilia paler, with the scales tipped with grey. Posterior wings pale fuscous. Marginal scales pale fuscous, with paler bases. Cilia very pale fuscous. Legs straw-colour, the tarsi speckled with fuscous. Abdomen very pale fuscous. ♀ Exp. al. $5\frac{1}{2}$ lin. In colour rather darker than the ♂.

A rare species. Constant both in size and colour. Allied to *H. neglectana* and *H. dealbana*, but may be distinguished from both by the *regular dark border on the apical margin of the anterior wings*.

The imago appears in May and June, frequenting wild rose-bushes. It occurs at Darenth Wood, and also in the Cambridge-shire Fens.

According to Fischer von Roeslerstamm, the larva is to be found, in July, in *Populus tremula*; at the end of July it goes into a yellowish-brown pupa, remaining in this latter state ten months.

4. *dealbana*, Fröl. Alis anticis albis; basi fascia rhombea fusca, atro strigata, medio diluore, apice puncto ferrugineo ad angulum analem macula ocellari plumbea; posticis fuscis. ♂ Exp. al. $6\frac{1}{2}$ lin.

Head fuscous in front, sub-ochreous behind and above the eyes. Face drab. Eyes black. Palpi fuscous, with the apices dirty white. Antennæ dark brown, alternated with a paler shade. Thorax in front dark fuscous, paler on the vertex. Patagia fuscous at the base, the apex sub-ochreous. Anterior wings dull, pale cream-colour with black, brown, fuscous and greyish clouds and markings; at the base is a deep fuscous patch, streaked transversely with dark brown, somewhat paler towards the costa, and sometimes also at its origin; its posterior margin is convex to the fold, then dilates towards the dorsal margin, which it attains, after forming a strongly-defined obtuse angle. The costal and dorsal margins maculated with fuscous and brown; the former distinctly so, in broad and narrow oblique streaks on its apical portion; an ochreous brown spot at the apex. At the centre of the costa is an irregular fuscous cloud, extending obliquely towards the anal angle and having a strong black or intense brown streak across the middle, towards the apical margin. Within the anal angle is an obtuse trigonate mark of ochreous or pale fuscous, irrorated with black. In the apical region is a fuscous cloud, and below it are two curved lustrous leaden-coloured streaks, in a roundish white space, together forming an indistinct ocelloid patch. Apical scales dark brown, somewhat interrupted, with pale cream-coloured bases, cilia fuscous, mottled with black, and pale bases, both becoming white at the anal angle. Posterior wings clothed with coarse fuscous scales on a pale-grey ground. Marginal scales fuscous with luteous bases. Cilia shining and paler. Abdomen pale fuscous, the caudal tuft straw-colour. ♀ Exp. al. 6 lin. In colour slightly darker than the ♂.

A very common species, subject to great variation in the colouring, and slightly so as to size. On the one hand it is very like *H. neglectana*, but the markings are neither so large nor so distinctly expressed, and the colour is less black; on the other, it resembles *H. Aceriana*; but this latter species is larger, the cream-coloured ground richer, and the basal patch not so angulated. Stephens mentions two varieties in the 'Museum Catalogue,' viz. *incarnana* and *Paykulliana*, the former being slightly removed from the type by a faint suffusion of the pale parts of the wing (see Wood, Ind. Ent. pl. 32. fig. 966); the latter is still more suffused and smaller in size (vide l. c. fig. 967). To these should be added *Alnetana*, or the very suffused examples, which Mr. Stephens has elevated to the rank of a species, with a mark of doubt,—we presume on the authority of Guénéé, who

says it comes between *dealbana* and *Aceriana*, and is always the same ; and that it occurs in June among Alders. In this country, at least, this variety occurs also where there is no Alder near. It is, however, quite true, as M. Guenée says, "*semper eadem*;" but whether or not it should rank as distinct, must be decided hereafter by a critical discrimination of the larvæ.

The imago appears in June, commonly round London ; it likewise occurs in Cheshire and in the midland counties.

5. *neglectana*, Dup. Alis anticis albis, fascia basi medioque cinereis obscuris, atro strigatis, apice puncto ferrugineo; ad angulum analem macula ocellari plumbea; fronte apicibusque palparum niveis; posticis fuscis. ♂ Exp. al. 6-6½ lin.

Head smoky black on the vertex ; cream-colour behind, over the eyes. Face white, sometimes cream-colour. Eyes black ; palpi smoky black, the apices and between white. Antennæ alternated with black and pale fuscous above, the basal joint white without, black within, and wholly black beneath. Thorax black, banded transversely with white. Patagia black at the base and the apex, broadly cream-colour between. Anterior wings dull, pale cream-colour with black, brown, fuscous and grey markings ; the basal patch made up of black and shining grey, more or less mixed with the ground-colour of the wing, extends from the costal to the dorsal margin, its posterior edge convex and angulated towards the latter ; in the middle of the costa is a very oblique abbreviated black or intensely brown streak, with numerous small spots of the same colour at its apex. Following these is a curved lustrous leaden-coloured mark, somewhat interrupted and extending from the costa to the anal angle. The apical costal streaks are dark brown, intermixed with lustrous leaden scales, produced interruptedly, and attain the apical margin. At the apex is a distinct amber spot. The dorsal margin is speckled with black, and within the anal angle, and preceding the leaden-coloured streak before named, are several black spots on a pale ochreous ground, arranged in the form of a pyramid. The ocelloid patch present, but undefined ; sometimes a slightly ochreous cloud occupies the centre of the wing. Apical scales black, with sub-ochreous bases. Cilia slightly shining, at the apex dusky brown, then smoky black, again dusky brown, both becoming white at and grey beyond the anal angle. Posterior wings clothed with coarse, dark, fuscous scales, on a grey ground. Marginal scales fuscous, with sub-ochreous bases. Cilia paler, slightly shining. Abdomen dark fuscous, the caudal tuft paler. ♀ Exp. al. 6-6½ lin. In general colour more defined than in the ♂ ; the basal patch of a bluish tinge.

A very beautiful and distinctly-marked insect, readily distinguished from its congeners by its *white face* and the *white tips*

to the *palpi*, as well as by the *darker* and *sharply-defined* mark at the base of the anterior wings. It most resembles *H. dealbana*, being of the same size, and, previous to the publication of Mr. H. Doubleday's list in 1850, was confounded with it. It is far from uncommon.

The imago appears in July among Willows. It has been taken in plenty by Mr. T. Wildman at Camberwell. It occurs throughout the metropolitan district and other places, also in the vicinity of Edinburgh.

The pupa is rich reddish brown, glossy, and measures 3 lines in length.

The larva feeds on the Willow. When full grown it spins a close white silken cocoon, covered with gnawings of the bark, oval in shape, and attached to the twigs.

6. *Servillana*, Dup. *Alis anticis stramineis pallidis; basi macula rhombea, ad angulum analem striga nebulosa apiceque brunneis; macula ocellari lineis cæruleis punctis atris; posticis maris basi margaritaceis, apice brunneo; fœm. brunneo-fuliginosis.* ♂ Exp. al. 6-6½ lin.

Head umbreous brown. Face umbreous brown, whitish beneath. Eyes black. Palpi as long as the head, griseous. Antennæ fuscous. Thorax smoky brown. Patagia paler. Anterior wings dull, yellowish white, with umbreous markings: at the base is a streaky irregular rhomboid patch. In the middle of the costa is a small pale oblique quadrate mark, which is sometimes produced into an interrupted streak to the dorsal margin; on the latter, within the anal angle, is a clouded streak, proceeding midway towards the costa, parallel with the apical margin; between this mark and the apical margin the wing is clouded with umbreous. At the anal angle is an ocelloid patch, bordered with lustrous blue streaks enclosing some suffused jet-black markings. The costa and the dorsal margin spotted with umbreous. Apical scales umbreous. Cilia paler. Posterior wings: at the base pearly white, at the apex clouded with umbreous, most intense on the margin. Marginal scales fuscous, with pale bases. Cilia whitish. Legs whitish, the tarsi spotted with fuscous. Abdomen umbreous black, the apex whitish. ♀ Exp. al. 6-6½ lin. Anterior wings marked like the ♂, but mostly darker. Posterior wings wholly umbreous or fuscous.

A rare species, and tolerably constant in size, but somewhat variable in the intensity of its markings.

The imago appears in May and June, and occurs at Darent Wood and Epping Forest, and also in the fens in Cambridge-shire, frequenting Sallows.

7. *Aceriana*, Dup. Alis anticis albidis, aut pallide ochraceis; fascia basi brunnea atroque strigata, media cinerea nebulosa; margine dorsali ante angulum analem macula trigona brunnea; apice puncto nigro, macula ocellari sub-plumbea atomis atris notata; posticis fuscis. ♀ Exp. al. 7-7½ lin.

Head fuscous, paler behind. Face fuscous, paler below. Eyes black, with a velvety appearance. Palpi above and at the apex drab, slightly fuscous at the sides and beneath. Antennæ fuscous, basal joint clothed above and beneath with drab-coloured scales. Thorax variable, sometimes fuscous, alternated by transverse bands of drab, at others dark brown, alternated in the same way and very frequently with rose pink. Patagia coloured like the thorax. Anterior wings dull, cream-colour with intense brown, fuscous and greyish markings; at the base is an umber-coloured streaky patch, darkest outwardly towards the dorsal margin, its posterior edge slightly oblique and variable, but always convex; sometimes the convexity assumes the form of a very obtuse angle, at others slightly convex with undulations, and at others again, considerably rounded and undulate. Extending obliquely two-thirds towards the anal angle, and proceeding from the middle of the costa is a pale buff cloud, much spotted with umber or iron-grey. Within the anal angle, on the dorsal margin, is a triangular patch of umber. Towards the middle of the apical margin is another deep umber-coloured mark, of very variable size and shape; below this is the ocelloid patch, consisting of a roundish cream-coloured space, enclosing two very pale, slightly lustrous leaden-coloured clouds, with a row of black spots between. There are one or two small umber streaks at the middle of the dorsal margin, and the costa is distinctly streaked with broad and narrow pale umber marks, mixed with lustrous leaden colour; the apical ones produced; a distinct eye-like spot at the apex: this spot is sometimes produced downwards to a point. Apical scales black, with cream-coloured tips from the apex to the middle of the margin, then cream-colour, clouded with pale grey, to the anal angle; the bases cream-colour. Cilia at the apex smoky black, then iron-grey, with the tips broadly dull cream-colour, both becoming paler at the anal angle. Posterior wings clothed with coarse fuscous scales, darkest at the apex, on a pearly lusted ground. Marginal scales pale fuscous, with cream-coloured bases. Cilia long, pale grey. Abdomen pale grey, with a fuscous tinge, the caudal tuft darker. ♀ Exp. al. 7-7½ lin. The umber-coloured mark towards the middle of the apical margin frequently dilute, the pale portions of the wing more suffused with iron-grey.

A very common species; allied to *H. dealbana*, but larger, and having the basal patch less angulated and the ground-colour of a warmer tint. It does not vary.

The imago appears abundantly among Poplars in July throughout England.

The larva feeds in the main bark and in the young shoots of Poplars. In the bark, its presence is detected by a conical lump of rust-coloured "*frass*" projecting. In the young shoots they take up their position at the tips, which are swollen into a gall-like process with a hollow mass of frass outside, somewhat resembling the case of a *Coleophora* (an extensive genus in the family Tineina). The larva itself is sluggish, of a dirty-brown colour, paler at the anal extremity; attenuated at both ends; about five lines in length when full grown. The head shining, pale-chestnut colour. The shield large, black, shining, and deeply foveated at the sides.

8. *pauperana*, Parreys. Alis anticis angustis, albis, cinereo variegatis; basi macula lata angulata fusca; fascia medio dilutiori; ante apicem atomis atris irregulariter dispositis; posticis fusco-griseis. ♂ Exp. al. $7\frac{1}{2}$ –8 lin.

Head pale fuscous. Face pale fuscous, darker than the head. Eyes black. Palpi above and between griseous; at the sides and beneath dark fuscous, inclining to dusky ferruginous. Antennæ pale fuscous. Thorax pale fuscous, streaked transversely with griseous. Patagia pale fuscous at the base; drab at the apex. Anterior wings greyish white, with a fuscous patch at the base, streaked with darker markings, particularly at its posterior margin, which is very undulated and oblique, extending nearly twice as far upon the dorsal as upon the costal margin; in the centre of the costa is an oblique, somewhat quadrate, grey streaked mark, with another undefined one near the anal angle, maculated with brown on the dorsal margin: in some specimens these two markings are produced so as nearly to unite, thus, considered together, forming an interrupted central fascia. There is a row of small intense brown spots towards the apical angle; a pale grey cloud occupies the place of the ocelloid patch, and the pale portions of the wing are more or less streaked and tinged with grey, and a few small similar coloured spots are on the costal and dorsal margins; no apical spot. Apical scales brown, interrupted by a streak of white in the middle, with pale bases. Cilia paler. Posterior wings very pale grey, with the extreme margin fuscous. Marginal scales pale fuscous, with paler bases. Cilia pale grey, with white bases, becoming wholly white at the anal angle. Abdomen and caudal tuft pale fuscous. ♀ Exp. al. $8-8\frac{1}{2}$ lin.

This is a rare species, varying somewhat in size and in the intensity of its markings; distinguished from its congeners by the *attenuated form of its wings, and by the basal patch dilating broadly along the dorsal margin.*

The imago appears at the end of March and beginning of April, in hedges near Darent Wood, among wild Rose-bushes.

We are not aware of any other locality. It has been bred by Mr. Bouchard.

9. *trimaculana*, Don. Alis anticis pallide ochraceis; macula basi fasciæque media ochraceis, brunneo strigatis; postica lineolis obliquis fuscis costalibus; apice puncto rotundo ferrugineo; ad angulum analem macula ocellari subplumbea, lineolis atris longitudinalibus; posticis fuscis. ♂ Exp. al. $6\frac{1}{2}$ —7 lin.

Head fuscous, sub-ochreous behind. Face drab. Eyes black. Palpi above and at the sides, drab at the base, grey at the apex; paler beneath. Antennæ pale brown; the basal joint clothed with drab-coloured scales. Thorax fuscous in front, and streaked transversely with drab. Patagia fuscous at the base; the apex dull ochreous or drab. Anterior wings pale drab, with a tawny tinge; the base is occupied by a large rhomboid ochreous patch, thickly streaked transversely with dark brown markings, most intense towards its outer edge and the dorsal margin; this is followed by a rich brown central fascia, commencing narrowly at the costa, and proceeds obliquely across the wing, dilating widely at the dorsal margin, which it occupies from about the middle to the anal angle; it is rounded on its outer, and concave on its inner edges; both angulated. Between this fascia and the basal patch are one or two maculations on the costal and dorsal margins. The apical portion of the costa is very obliquely streaked with brown; the second streak from the central fascia being continued to the middle of the apical margin, which has an eye-like spot at the apex. The ocelloid patch is marked with several, more or less distinct, dusky-brown longitudinal lines, and above them is a dark dusky-brown cloud. Apical scales black, with drab bases, interrupted below the apical spot by a drab line running through them and the cilia. Cilia shining grey, becoming iron-grey within the anal angle. Posterior wings clothed with dark, coarse, fuscous scales, on a grey ground, slightly darker at the apex. Marginal scales dark fuscous, with luteous bases. Cilia grey. Abdomen fuscous; the caudal tuft dull drab. ♀ Exp. al. 7— $7\frac{1}{2}$ lin.

A very abundant species, and equally variable; every possible variety occurring between pale or ochreous drab, with slightly darker markings, to obscure red. Another range of variety occurs where the ground-colour is pale drab, with the markings running through all the shades of brown. The late Mr. J. F. Stephens, in the Museum Catalogue, has attempted to raise a very dark suffused red variety, "*excruciana*," to the rank of a species, but asks, "An pr. var.?" It certainly is nothing more. See also the Appendix to said Catalogue, p. 98.

The imago appears in June, July, and August, among Elms, throughout the country, in Scotland and in Ireland.

The pupa is chestnut-brown and shining, about three lines long, and enclosed in a dull white silken web, in consistence and appearance resembling the webs spun by spiders under and among leaves, as a nidus for their eggs.

The larva, when full-grown, measures from 5 to 6 lines in length, and is of a pale olive-green colour; the head shining, black, and hairy; the shield black, shining, divided by a dorsal line; the second and third segments each with a row of four oval, greyish spots placed in a transverse line, with two smaller ones on each side. The anal segment has two transverse rows of spots, followed by an oval patch of minute greenish dots, slightly darker than the ground-colour. It feeds on *Ulmus campestris*, spinning the terminal leaves together. It does not touch the broad-leaved Elm (*Ulmus montana*): vide Edwin Lankester, in the "Entomologist," p. 143. These larvæ assume a yellow appearance before going into pupa.

10. *minutana*, Hub. Alis anticis *maris* pallide ochraceo-roseis, nigro-fusco strigatis; macula basi rhombea, in medio fascia obliqua nigro-fusca; ad angulum analem macula ocellari lineis atris longitudinalibus; posticis fuscis; *fœm.* alis omnibus dilutioribus. ♂ Exp. al. 6-6½ lin.

Head ochreous behind, dusky in front. Face ochreous. Eyes black. Palpi shorter than the head, grey at the sides, the tips and beneath drab. Antennæ iron-grey, alternated with drab. Thorax dark fuscous, streaked transversely with dusky ochreous. Patagia dusky at the base, the apex ochreous. Anterior wings pinkish ochre, with intense brown and ferruginous streaked markings; the base is occupied by a streaked rhomboid patch, darkest at its posterior edge, followed by one (sometimes two) interrupted angulated streak, extending from the costal to the dorsal margin; in the middle of the costa commences a broad undulating fascia, terminating near the anal angle, suffused on its inner, but sharply defined on its outer edge; the colouring of this fascia is of a rich brown, inclining at places to dark violet. The costa beyond this fascia to the apex, is closely and very obliquely streaked with rich brown markings, the second of which, counting from the central fascia, is continued to the middle of the apical margin, where it is further produced, along the margin itself, to near the anal angle: an eye-like mark at the apex. The ocelloid patch at the anal angle is very distinct, and in the middle are from five to seven well-defined longitudinal black streaks, with iron-grey irrorations between them. Apical scales black, with very narrow ochreous tips and bases. Cilia black at the apex, then brown, merging into pinkish-drab at the anal angle and iron-grey beyond it; bases pale. Posterior wings dull, dark fuscous, deepest towards the apex. Marginal scales dark fuscous with straw-

coloured bases. Cilia long, shining, dark grey. Abdomen dark fuscous. ♀ Exp. al. 6-6½ lin., and frequently with the ground colour and markings paler than in the ♂.

Not a common insect, variable in the intensity of the colours of the anterior wings; in character the markings resemble those in *L. cinerana*, but they are *always of a richer tint of brown*. It is also allied to *H. trimaculana*, but distinguished by *the pale space beyond the basal patch, which is streaked, and not plain as in the latter species*.

The imago appears in July among black Poplars. It has been taken at Camberwell, Blackheath, Dartford Heath, and at other places near and around London.

The larva feeds on the Black Poplar, eating the young leaves.

Genus II. STEGANOPTYCHA, STEPH.

Palpi longer than the head, densely clothed with scales at the sides, at the apex and beneath; the scales long towards the apex, and partly concealing the apical joint. The basal joint elongate, ascending, truncate; apical slender, club-shaped, as long as the basal, clothed with short, appressed scales; middle moderately stout, ascending, curved, thickened beyond the middle, three times the length of the apical. Maxillæ longer than the palpi. Maxillary palpi minute, two-jointed; the joints globose. Thorax slender, obovate. Anterior wings: in length more than twice the width. The costa regularly arcuated; the apex slightly produced; the apical margin concave; dorsal margin nearly straight. The costal vein reaches the margin beyond the middle. The subcostal nervures scarcely equidistant. The discoidal cell elongate, lies in the middle of the wing, and extends about two-thirds its length. The sixth apical nervure *bends upwards* towards the margin. Posterior wings ample; the apex obtuse, somewhat produced; apical margin concave; anal angle *slightly produced*; dorsal margin straight. The median vein furcates towards its apex midway between the supermedian nervure and the margin. Abdomen slender, and tufted in the ♂, stouter in the ♀.

The insects in this genus make a still nearer approach to the *Anchyloperæ*, and, like the preceding, the ground-colour of the anterior wings is white, or whitish, but the markings much more diffused over the surface. Except the last species, they are included in the genus *Lithographia* in the Museum Catalogue; but as that name is now retained to designate those species which have the costa folded, it has been necessary to

assign to the present group the older *Stephensian* generic name *Steganoptycha*. The larvæ feed on shrubs and trees.

The three British species are thus arranged :—

- A. Anterior wings with a *pale fascia* much *dilated*
on the dorsal margin Species 1, 2
- B. Anterior wings with a pale *dorsal blotch produced*
to the base along the dorsal margin Species 3

1. *nævana*, Hub. Alis anticis griseis aut cinereis; basi macula, fascia media irregulari obliqua cinereo-brunneis; ad angulum analem macula plumbea; puncto nigro postico costam versus; posticis fuscis. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head fuscous. Face drab. Eyes intense brown, with a velvety appearance. Palpi long as the head, dull brown at the sides and beneath. Antennæ dull brown. Thorax and patagia dull brown, the latter paler at the apex. Anterior wings glossy, pale drab, sometimes whitish. The base is occupied by an umber patch, darkest at its outer edge, streaked at the base and on the dorsal margin with dark grey or leaden colour, sometimes drab; this patch extends one-fourth the length of the costa, then takes an oblique direction to the fold, where it makes an angle, and proceeds to the dorsal margin, sometimes in a straight line, at others it is convex. At the centre of the costa commences an irregularly-bordered dark brown or umber fascia, broad at its origin, narrowing at the middle (where there is a conspicuous dark brown spot) and terminating within the anal angle; between this fascia and the apex the costa is dark brown, streaked with drab-coloured, geminated markings. The ocelloid patch is large, bordered with rich brown towards the apex of the wing, and consists of two slightly lustrous, light-coloured clouds, divided transversely by a dusky streak, bearing the longitudinal lines, which are but faintly indicated, frequently almost obsolete. There is a distinct eye-like spot at the apex. Apical scales drab, speckled with brown. Cilia shining, iron-grey at the apex, becoming pale grey or drab at the anal angle, the bases pale, and interrupted by a drab streak running through them below the apical spot. Posterior wings glossy, fuscous. Marginal scales fuscous, with dusky bases, but paler. Cilia grey, with a fuscous tinge. Abdomen shining, fuscous grey, the caudal tuft paler. ♀ Exp. al. $6\frac{1}{2}$ –7 lin.

A common species, and very variable, both in the ground-colour of the anterior wings, and of the markings; the former ranges from silvery white to a dark smoky grey, sometimes bordering on dull brown, the latter from rich golden brown to dark umber. It is very like *S. geminana*, and some instances of *Phlæodes tetraquetrana*. It is rather larger than the former and has its wings somewhat broader, and may be distinguished from

the latter by the dark spot beyond the middle being *nearer to the costa than to the dorsal margin*.

The imago appears from June to August among Holly: it is generally distributed over the country; it occurs also in the vicinity of Edinburgh, and at Belfast in Ireland.

The pupa is 4 lines long, of a rich brown colour and slightly shining.

The larva feeds in the young shoots of the Holly, and may be collected in abundance in May and June. It is of a dirty green colour, with a black head and black shield. Before assuming the pupa state it spins a dull white silken web, either turning down one leaf, or fastening two or more together.

2. *geminana*, Steph., MSS. Alis anticis nitidis, griseis nebulosis; fascia basi, media, puncto apice brunneis; costa strigis geminatis albidis; macula ocellari ad angulum analem distincte notata, griseo brunneoque strigato; posticis fuscis. ♂ Exp. al. 6 lin.

Head dull fuscous. Face dull fuscous, slightly paler below. Eyes black. Palpi above and between greyish drab, at the sides fuscous grey, beneath dark brown. Antennæ fuscous. Thorax and patagia fuscous, the latter with the tips paler. Anterior wings silvery white, with a greyish tinge marked and fasciated with umber and rich ferruginous brown; the base is occupied by a rich umber patch, extending one-fourth along the costa and one-third along the dorsal margin, its posterior edge very rounded and oblique to the middle, and then becomes nearly straight; is streaked transversely and paler within. From the middle of the costa to the anal angle is an umber fascia, mixed with ferruginous brown, broad and undefined at its origin, especially on its anterior edge, narrowing and sharply expressed towards its termination, particularly at that portion which impinges on the ocelloid patch. The costa is streaked throughout, and its apical portion is marked with five distinct geminations with umber interspaces, which are produced on a dark ferruginous cloud towards a point below the apical spot; this latter is umber-coloured, and produced into a streak along the apical margin. Between this and the central fascia lies the ocelloid patch, which is well defined, roundish, and consists of a slightly lustrous, silvery-grey cloud, with an indistinct, transverse brown streak running through it. The pale portions of the wing, especially on the dorsal margin, streaked with umber. Apical scales (as well as the cilia, interrupted by a white streak below the apical spot) smoky brown, with whitish bases towards the anal angle. Cilia smoky brown at the apex, becoming paler towards the anal angle, and iron-grey beyond it. Posterior wings clothed with coarse fuscous scales on a grey ground, darkest towards the apex. Marginal scales pale fuscous, with drab bases. Cilia long, slightly shining, paler fuscous; grey at the anal

angle. Abdomen fuscous, the apex chocolate colour. ♀ Exp. al. $6\frac{1}{2}$ lin. Markings somewhat more suffused than in the ♂.

This species does not vary. In general appearance it is very much like *S. nevana*, but the *anterior wings are rather narrower*.

The imago appears commonly in the north of England, especially on the Moors round Sheffield. Stephens gives Yorkshire and Whittlesea Mere as its localities.

The larva feeds on *Vaccinium Myrtillus*.

3. *ustomaculana*, Curt. Alis anticis cinereis, nitidis; basi macula rhombea, medio fascia obliqua nebulisque ad apicem brunneis; macula margine dorsali caudata, grisea, fusco strigata; costa strigis griseis, geminatis; posticis fuscis. ♂ Exp. al. $5\frac{1}{2}$ –6 lin.

Head dusky drab, paler on the vertex. Face pale drab. Eyes black. Palpi as long as the head, dark fuscous, with the apices whitish. Antennæ dull, deep fuscous. Thorax and patagia amber, the latter slightly paler. Anterior wings dull; amber, with a large white or grey blotch on the dorsal margin, and delicate violet markings towards the apex. At the base is a rhomboid, pale amber patch, extending one-fourth along the costa, then proceeding with an indented edge to the middle of the wing, and afterwards returning to the base with a rounded outline, without touching the dorsal margin, towards which its colour is darkest. At the middle of the costa commences an amber fascia, which attains the anal angle; it is narrow at its origin and termination, and dilates in the middle. Before the middle of the costa are two faint geminated streaks, and five others more defined beyond, with amber interspaces. The apical spot distinct, with a white streak below: a pale amber cloud below the apex, more or less produced to the anal angle, and encloses a pale oval spot. The dorsal blotch is obtusely triangular, with the apex rounded, and its anterior portion continued narrowly to the base; of silvery-white colour with dusky freckles, and wedge-shaped, black markings along the margin; the pale portions of the wing freckled and of a delicate pale violet tinge. Apical scales pale amber, with lighter bases and interrupted below the apex by a white streak. Cilia smoky brown at the apex, becoming paler at the anal angle. Posterior wings and marginal scales fuscous, the latter with the bases paler. Cilia fuscous grey. Abdomen pale fuscous, the caudal tuft drab. ♀ Exp. al. $6\frac{1}{4}$ lin. The basal patch of the anterior wings less distinct than in the ♂.

A rather common insect in the North of England and in Scotland.

The imago appears in June, and was first captured by Mr. John Curtis at the Black Forest, Loch Rannock: it has since turned up wherever the food-plant of the larva abounds.

The larva feeds on the red Whortleberry (*Vaccinium Vitis-idaea*). It is whitish, with a very pale brown or luteous-coloured head; shield of same colour, but darker behind. The spots brown, and the anal segment margined laterally and transversely with grey.

Genus III. ANCHYLOPERA, STEPHENS.

Palpi short, slender, remote, porrected horizontally; clothed with scales, chiefly towards the apex; basal joint oblong, curved, drooping, pyriform; apical slender, obovate, not so long as the basal; middle ascending, curved, slightly stouter than the basal beyond, the centre, three times the length of the apical. Maxillæ as long as the palpi. Thorax slender, ovate. Anterior wings, length greater than twice the width. Costa mostly regularly arcuated, sometimes obtusely so towards the base. Apex considerably produced, forming a prominent hook. Apical margin entire, dorsal margin rounded. The discoidal cell extends two-thirds along the wing and receives a nervure inserted in the subcostal vein, midway between the first and second subcostal nervures, which passes to the apical vein at the insertion of the first apical nervure. Posterior wings ample; apex obtuse; apical margin concave. The median vein sometimes simple, at others furcate. Abdomen long, slender and tufted at the apex in the ♂; stout and obtuse in the ♀.

A very natural genus, of considerable extent, and distinguished from the rest of the group by the falcated or produced apex of the anterior wings, and the longitudinal character of the markings (except the last species, *A. unguicella*, where they are more transverse), which are also very varied. With few exceptions, the species are tolerably common, and the larvæ are of various habits; some feeding on herbaceous plants (*A. Lundana*), and others on shrubs and forest trees (*A. Upupana*). The imago of many of them have been successfully bred by several collectors, but the larvæ themselves have not yet been the subject of critical observation.

The known British species attain to the number of fourteen, and are arranged as in the following table. On the Continent are several others.

- | | |
|--|-------------|
| A. Anterior wings <i>not marked longitudinally</i> by an undulating or flexuous striga, and without fasciæ . | Species 1-3 |
| B. Anterior wings <i>marked longitudinally</i> . | |
| <i>a.</i> By an undulating line <i>obliquely</i> from the base to the apex | Species 4-7 |
| | κ 2 |

- b. Having a *dark coloured rounded patch at the base*, on the dorsal margin Species 8-12
 c. By an *oblique straightish striga* Species 13
 C. Anterior wings *with fasciæ* Species 14

1. **ramella**, Linn. Alis anticis niveis; margine dorsali subnebulosis, cinereo nigroque strigatis, apice ferrugineo. Macula ocellari ad angulum analem plumbea aut cærulea, punctis nigris; posticis albidis, margine apiceque fuscis. ♂ Exp. al. $6\frac{1}{2}$ —7 lin.

Head snow-white, slightly black in front between and below the antennæ. Face white. Eyes black. Palpi snow-white. Antennæ pale grey, darkest at the apex, the basal joint clothed with black scales. Thorax snow-white, speckled with black in front and behind; patagia snow-white. Anterior wings snow-white, with black ferruginous and lustrous blue markings. The costa is maculated from the base to the middle with black, and from the middle to the apex are six oblique streaks of brown colour, most intense on the costa and becoming broader and darker as they approach the apical spot, which is ferruginous; these streaks converge to a point just within the apical margin. The dorsal half of the wing is clouded and streaked with black mixed with white, there being a roundish patch of the latter colour towards the base. The ocelloid patch at the anal angle is obscure and marked with lustrous blue streaks, and bordered within with ferruginous; between this patch and the costa is a black cloud streaked with lustrous blue. A few black dots near the base, towards the costa. Apical scales black below the apex, then snow-white. Cilia smoky black, interrupted by two white streaks below the apex, merging gradually into very pale grey at the anal angle and iron-grey beyond. Posterior wings white at the base, gradually merging into fuscous at the margins. Marginal scales fuscous, with straw-coloured bases. Cilia white at the anal angle, very pale grey towards the apex. Abdomen very pale fuscous grey, the caudal tuft pale drab. ♀ Exp. al. 8— $8\frac{1}{2}$ lin. In colour darker than in the ♂.

This beautiful distinct species is not variable, save as to size, and is at once distinguished from the rest of its congeners by the *pure white ground colour* of its anterior wings. It is rather uncommon.

The imago appears in June at Darenth, Plumstead and West Wickham Woods, Sydenham, also at Dartford Heath Fence. It seems to be attached to the White Poplar.

2. **Mitterbacheriana**, Schiff. Alis anticis rufis, semifascia recta basi saturatiore margine dorsali, albo postice marginata; posticis brunneis. ♂ Exp. al. $6\frac{1}{2}$ —7 lin.

Head dull ferruginous, paler close to the eyes. Face pale ferru-

ginous above, drab below. Eyes black. Palpi drab. Antennæ grey. Thorax and patagia ferruginous, the latter paler. Anterior wings ferruginous, with brown markings and leaden-coloured clouds; at the base, and extending nearly to the middle of the dorsal margin, is a chocolate-brown patch, with an oblique, straight edge, bordered with whitish, and proceeding rather more than midway towards the costa, where it suddenly softens into the slightly leaden lustrous cloud above and beyond it. The apical portion of the wing is bright ferruginous, inclining to red. The costa is marked with geminated streaks throughout; those before the middle close and less defined, those beyond, four pairs in number, are of a shining drab-colour somewhat golden, and converge to a point below the apical spot, which is deep ferruginous and distinct. The ocelloid patch is present, but small, undefined, and of a leaden tinge. Apical scales below the apex deep brown with drab bases, then wholly drab to the anal angle. Cilia interrupted by two light drab-coloured streaks below the apex, then very pale brown, at the anal angle grey. Posterior wings reddish brown, slightly darker towards the apex. Marginal scales fuscous, with tawny bases. Cilia yellowish drab and dull. Abdomen brown, the caudal tuft dusky ochreous. ♀ Exp. al. 6-6½ lin. Slightly brighter in colour.

A rather common species, but does not vary. In size and colour it very much resembles moderately-coloured specimens of *Lithographia Penkleriana*, but may be always distinguished from them by the *more evenly-coloured apical portion of the anterior wings*. These two insects are frequently mistaken for each other, and it often requires some discrimination to separate them.

The imago appears in May and June in woods in the metropolitan district, among Oaks and Beeches. It occurs also near Dublin, and at Belfast in Ireland.

The pupa is pale brown and measures 3½ lines.

The larva feeds on the Oak, and has attained the sobriquet of the "Vaulted Chamber" maker (see Entomologist's Companion, p. 136), and Mr. T. Wilkinson of Scarborough was the first to rear the imago (see Entomologist's Weekly Intelligencer, vol. ii. p. 75), to whose liberality we are indebted for specimens of the larvæ. The colour is dull green. Head heart-shaped, diaphanous, yellowish-brown with black wedge-shaped marks at the base, the points of these marks directed towards the mouth; the shield yellowish, paler in front, with a transverse row of uneven, black spots towards the base; the segmental spots or warts are oval, transverse, of paler green than the body, shining, and the posterior dorsal pairs largest; a dusky patch on the anal segment. It draws the sides of an oak leaf together with white silk, sometimes the whole length, at others only the top or the basal half.

It feeds *within* the chamber on the inner portion of the leaf, leaving the venation and outer cuticle untouched; it goes from one leaf to another performing the same process. When about to assume the pupa state, it spins a kind of covered way from the top of the chamber to the bottom, where it forms a loose cocoon; it lies dormant during the winter, and goes into pupa in the spring. When the imago is about to emerge, the pupa wriggles its way to the top of the chamber, and effects its change.

3. **Upupana**, Treit. Alis anticis nigris fuliginosis; apice costæ geminatis strigatis, pone medium ferruginea; posticis nigris fuliginosis dilutioribus. ♂ Exp. al. $7\frac{1}{2}$ –8 lin.

Head ochreous behind and over the eyes; dull brown in front. Face dull ochreous above, paler below. Eyes black. Palpi above, at the sides, and between ochreous, with the tips dusky, paler beneath. Antennæ dark fuscous, at the base ochreous. Thorax dusky ochreous, paler in front. Patagia rich ochreous, slightly paler at the shoulder. Anterior wings: dull intense smoky brown to the apical angle, where it softens into rich ferruginous; at the base, and especially on the costa, is an obscure leaden gloss. The costa is marked before and beyond the middle with geminated streaks; those before the middle are of a leaden lustre, those beyond shining, cream-colour, and are directed to a point below the apical spot, which is distinct, and of intense brown. A streak of lustrous blue scales lies *within*, and parallel to, the apical margin. *In some lights the markings, as in Anch. Lundana and A. derasana, are distinctly visible.* Apical scales: below the apex intense brown, with yellow bases, the rest ochreous, mottled with brown. Cilia slightly shining; at the apex intense brown, followed by two cream-coloured streaks, and then they merge into a pinkish-drab colour, slightly paler *at*, and iron-grey *beyond*, the anal angle. Posterior wings deep purplish brown, with a smoky appearance, darkest towards the apex. Marginal scales fulvous, towards the anal angle speckled with dark fuscous. Cilia slightly paler. Abdomen deep brown. ♀ Exp. al. 8–8½ lin.

First introduced into the British list by Mr. H. Doubleday, who bred it in 1848. It does not vary in colouring, but differs slightly in size. The *dark brown colour, both of the anterior and posterior wings*, distinguishes it at once from all the other British species of this genus.

The imago appears in May and June at Black Park, Darenth, and West Wickham Woods; also at Epping, near Hastings, and near Tunbridge Wells, among Oaks and Birches.

The larva feeds on Oak.

4. *subarcuana*, Douglas. Alis anticis cinereis, ad costam fusciscentibus; medio longitudinaliter pallide brunneis; posticis nitidis griseis. ♂ Exp. al. 7-7½ lin.

Head grey. Face paler. Eyes black. Palpi above and at the sides grey; paler beneath and between. Antennæ fuscous, somewhat grey at the base. Thorax grey. Patagia slightly paler. Anterior wings grey, with fuscous markings, and irrorated with dusky atoms. Near the base, on the dorsal margin, commences a faint undulating white line, forming two arches in its course, terminating at the apex, and dividing the surface of the wing into two portions; that towards the costa is clouded with fuscous, most intense close to the line; the portion towards the dorsal margin grey, with a dense dusky irroration, the margin regularly maculated with iron-grey. The roundish space at the anal angle represents the ocelloid patch. The costa is streaked throughout its course, the streaks towards the apex being geminated. The apical margin dusky. Apical scales whitish, mottled with drab, cilia grey, with the tips paler; a dusky streak runs through both, below the apex. Posterior wings pale fuscous, with a pearly lustre. Marginal scales and cilia straw-colour. Abdomen fuscous, the caudal tuft drab. ♀ Exp. al. 6½ lin. In general colour not so rich as in the ♂.

This species is noticed in the Museum Catalogue (Stephens), p. 39, as a variety of *Anch. biarcuana*; but its smaller size, sombre-coloured, narrower, and sharper-pointed anterior wings, are differences which entitle it to rank as a species. *It is allied to A. biarcuana and A. diminutana; about the size of the latter, and distinguishable from both by the longitudinal wavy line being faintly expressed, and by the colour above and below it being nearly the same, whereas in the two species mentioned the dorsal portion of the wing is always the paler.*

The imago appears in May and June, and again in September, and occurs at Wimbledon Common, Whittlesea Mere, and other places in Cambridgeshire.

5. *diminutana*, Hub. Alis anticis ad apicem rufis; vitta lata undata per totam marginem dorsalem cinerea; posticis fusco griseis. ♂ Exp. al. 6 lin.

Head drab, darkest on the vertex. Face paler. Eyes black. Palpi drab, dusky at the apex, paler beneath. Antennæ drab, paler beneath. Thorax drab in front, pale brown on the vertex. Patagia drab at the base, with a reddish tinge at the apex. Anterior wings drab, irrorated with dusky atoms, and ferruginous markings. A whitish undulating, longitudinal line divides the surface of the wing into two distinct portions; it commences very faintly on the dorsal margin, near the base, proceeds and undulates upwards, form-

ing an arch in the middle, followed by a bend downwards, and then in a straight direction to the apex. The part above this line is drab at the base, near the costa; but at the middle of the base, and at the apex, it is ferruginous brown, with a red tinge, gradually deepening towards the latter and the central streak. The costa marked throughout with fine streaks. The dorsal portion of the wing drab or whitish, irrorated with dusky atoms, as well as near the base, towards the costa; a row of fuscous scales along the apical margin. Apical scales whitish. Cilia grey. Posterior wings pale grey at the base, slightly fuscous at the apex. Marginal scales pale fuscous, with paler bases. Cilia grey. Abdomen and caudal tuft pale fuscous. ♀ Exp. al. 7 lin.

An uncommon species, slightly variable in size, and in the intensity of its colours. Somewhat smaller than *Anch. Mitterbacheriana*, and much less than *A. biarcuana*, which latter insect it much resembles, but may be distinguished from it by the *undulating longitudinal line across the wing being only ONCE arched instead of TWICE, as in this latter species.*

The imago appears in June and July throughout the south of England, affecting Sallows.

6. *biarcuana*, Steph. Alis anticis griseis; in medio brunneis; ad marginem dorsalem griseis; linea longitudinali biarcuata albida; posticis griseisve, albicantibus. ♂ Exp. al. $7\frac{1}{2}$ —8 lin.

Head and face varying from dull drab to pale grey. Eyes black. Palpi above and at the sides fuscous or drab, paler beneath. Antennæ: above fuscous, drab beneath. Thorax fuscous, paler in front. Patagia same colour as the thorax. Anterior wings very pale drab, with brown markings, and irrorated with dusky atoms. Near the base, on the dorsal margin, commences a white wavy line, which arches twice in its course, terminating at the apical margin, and dividing the wing into two portions; that towards the costa is clouded with brown, softening off into pale drab; the dorsal portion is irrorated with dusky atoms, and regularly maculated with dark fuscous on the margin. The roundish space at the anal angle represents the ocelloid patch, in which, on the dorsal margin, is a pale brown elongated mark. The costa is streaked throughout, the streaks near the base faintest and smallest; those towards the apex are geminated and produced to a point in the margin below the apical spot; one or two sharply-defined deep brown longitudinal short streaks are placed before the apex; extreme margin edged with brown. Apical scales white. Cilia very pale grey or drab. Posterior wings pale fuscous, with a pearly lustre; some dusky spots at the apex beneath, visible through the upper surface. Apical scales straw-colour, with whitish bases. Cilia straw-colour. Abdomen fuscous; the caudal tuft subochreous.

An uncommon species; well figured in Wood's 'Index Ent.'

pl. 32, fig. 959; variable in size and colour. It is allied to *Anch. diminutana* and *Anch. uncana*. From the former it is distinguished by its *larger size* and the *double arch in the longitudinal undulating line across the wings*. It is smaller and paler coloured than *A. uncana*, and *further distinguished from it by the pale, and less distinctly geminated costa*.

The imago appears in June and July, and is distributed throughout the country; the recorded localities are around London and near Birmingham; it has also been captured near Ormiston in East Lothian, N. B.

7. *uncana*, Hub. Alis anticis brunneis; arcubus duobus cinereis nitidis ad marginem dorsalem; posticis griseo fuscis. ♂ Exp. al. 9 lin.

Head dull fuscous, or griseous. Face slightly paler. Eyes black. Palpi above and at the sides smoky grey, paler beneath and between. Antennæ dark fuscous, paler beneath. Thorax dull fuscous. Patagia at the base dull fuscous, the tips paler and shining. Anterior wings grey, with chocolate-brown markings; near the base, on the dorsal margin, commences an undulating line which divides the surface of the wing into two parts, and forms two arches in its course to the apical margin: that portion towards the costa is chocolate-coloured near the undulating line, becoming paler at the margin; the dorsal portion is grey, thickly clouded with fuscous. The roundish mark at the anal angle is the ocelloid patch, and at its inner portion is a suffused, pale, curved, chocolate-brown streak; from the middle of the costa is a very oblique, truncated fascia, of chocolate-brown, extending to the ocelloid patch. The costa is marked throughout with pale geminated streaks, those towards the apex most distinct, lustrous, and produced; the apical spot distinct, and below it is a whitish patch, with a black streak running through it. The costal portion of the wing, before the truncated fascia, with a leaden tinge, beyond it pale chestnut-brown; extreme apical margin edged with brown. Apical scales fuscous, with drab tips. Cilia fuscous, with paler tips, becoming lighter coloured towards the anal angle. Posterior wings pale fuscous, straw-colour at the apex. Marginal scales slightly straw-colour. Cilia very pale fuscous. Abdomen fuscous; the caudal tuft ochreous. ♂ Exp. al. 9-9½ lin.

By no means common. It varies in size and in the intensity of its markings. Most closely allied to *Anch. biarcuana*, but its *dark and regularly geminated costal margin* distinguishes it from that species.

The imago appears in May and June in heathy places. It occurs at Darent, Coombe, and West Wickham Woods, and other localities around London; also in the North of England, and at Belfast in Ireland.

8. *Myrtilana*, Treits. Alis anticis pallide griseis; basi marginis dorsalis macula magna angulata castanea; postice fascia obliqua brunnea strigata lineis atris longitudinalibus; apice brunneo; posticis griseis. ♂ Exp. al. 7 lin.

Head and face varying from ochreous to chocolate-colour. Eyes black. Palpi dull fuscous. Antennæ fuscous, the basal joint clothed beneath with shining drab scales. Thorax ochreous, or chocolate-colour. Patagia ochreous. Anterior wings dirty-white, with chocolate and ferruginous-coloured markings. At the base, and extending to the middle of the dorsal margin, is a dull chocolate-coloured mark; its edge facing the costa, usually straight, and towards its termination it becomes suddenly arched, and has its posterior edge rounded. From the middle of the costa proceeds a pale brown angulated indistinct fascia, which terminates on the dorsal margin within the anal angle; it is darkest at its origin, and in the middle are two or more longitudinal marks or lines of chocolate colour, with another, somewhat oval, towards its termination. The ocelloid patch is roundish, and without markings. The costal portion of the wing is clouded with pale brown, and a white line runs along and beyond the costal border of the basal mark. Along the apical half of the costa are four pale geminated streaks, with brown spaces between. The apical spot is elongated. The pale portions of the wing, especially towards the apex, irrorated with dusky atoms, and the extreme apical margin white. Apical scales (as well as the cilia) interrupted below the apex by a brown streak running through, grey, with the tips whitish. Cilia shining, pale straw-colour, becoming greyish at, and iron-grey beyond, the anal angle. Posterior wings pale fuscous, with a pearly lustre at the base. Marginal scales and cilia shining, straw-colour, slightly grey towards the anal angle. Abdomen fuscous, with a dull ochreous caudal tuft. ♀ Exp. al. 6-6½ lin.

An uncommon species, and somewhat variable in size and colour. In appearance comes nearest to *Anch. Lundana*, but is larger and paler, and has the *apex of the inner margin of the basal patch suddenly arched*, whereas in *Lundana* it is *regularly rounded*.

The imago appears in June, the males flying in the afternoon among *Vaccinium Myrtilus*, the females at rest. It is confined to the North of England, where its food-plant grows. It has also been taken in Scotland.

9. *Lundana*, Fabr. Alis anticis albidis; basi marginis dorsalis macula magna castanea, postice fulvis vel brunneis, striga angulata cærulea; posticis griseis. ♂ Exp. al. 7 lin.

Head straw-colour, darker on the vertex. Face straw-colour. Eyes black, with a velvety appearance. Palpi straw-colour, pale grey at the base beneath. Antennæ dark grey above, paler beneath.

Thorax straw-colour or drab in front, chocolate-colour behind. Patagia straw-colour or drab. Anterior wings glossy straw-colour, with deep chocolate and ferruginous markings; on the dorsal margin, at the base, is a semi-ovate deep chocolate patch, extending beyond the middle, with its border sharply defined. From the middle of the costa proceeds a very oblique fascia, truncate at the ocelloid patch; it is edged posteriorly with an angulated streak of lustrous blue scales, is ferruginous-brown, with a crimson tinge, darkest at its origin, and streaked longitudinally with black at the angle. Beyond this fascia the wing is suffused with ferruginous, and the ocelloid patch is small and but faintly indicated. The costa, at the base, is distinctly streaked with fine lines; beyond the middle are five golden-lustred geminations, all directed to a point in the margin below the apical spot, which is elongated, and of chocolate-colour. Apical scales shining bright straw-colour, and (as well as the cilia) interrupted below the apex by one black streak running through them. Cilia straw-colour, becoming blackish beyond the anal angle. Posterior wings dull, clothed with fuscous scales on a pearly ground. Marginal scales fuscous, with straw-coloured bases. Cilia grey. Abdomen dark fuscous, the caudal tuft drab. ♀ Exp. al. 5-6½ lin. In colour not so rich as the ♂.

A common species, variable in size, and slightly so in colour. Allied to *Anch. derasana* and *A. Myrtillana*. It is smaller than the former, and further separable from it by the more acute apex of the anterior wings, as well as by the costal patch towards the apex being paler than the basal one, and less defined on its inner edge. It is also smaller than *A. Myrtillana*, darker coloured, and has the inner margin of the basal patch rounded, and not suddenly arched.

The imago appears in May, and again in August: it must therefore be double-brooded. It flies freely, as Mr. R. Shield informs us, from 5 to 6½ A.M.; it also flies at midday in the sunshine. It occurs generally throughout the country; also in Scotland, in the vicinity of Edinburgh, and near Dublin.

The larva feeds on *Vicia sepium* and *Lathyrus pratensis*, and has been bred from both by Herr Schmid of Frankfort, and also by Mr. Stainton. It is active, and greenish grey in colour. The head testaceous, with two longish black marks on the vertex; the shield is paler than the head; diaphanous, with a large black spot on each side, and two small ones at the centre of the posterior margin; the spots are whitish, shining, and raised; the anal segment pale testaceous, with a dark transverse line; true legs black; pro-legs same colour as the body. It spins two opposite leaves of the food-plant together, and feeds on their parenchyma.

10. *derasana*, Hub. Alis anticis cinereis; basi macula magna ustulata, alteraque postica ad costam rufa; posticis griseo-fuscis. ♂ Exp. al. $7\frac{1}{2}$ –8 lin.

Head and face ferruginous brown, the latter darker below. Eyes black. Palpi: above and at the sides dull smoky brown, paler at the bases and beneath, whitish at the base between. Antennæ: grey above, iron-grey beneath; basal joint fulvous above, and brown beneath. Thorax drab in front, and fuscous behind; in some specimens ferruginous. Patagia drab, with an ochreous tinge. Anterior wings dull chocolate-brown at the base, brick-red at the apex, divided by a pale drab undulating band between. At the base, on the dorsal margin, is a conspicuous chocolate-coloured semi-ovate patch; another brick-red patch occupies the apical half of the wing at the costa. These two patches are bordered with white, and divided by a broad undulating band maculated with iron-grey, commencing at the base of the costa, and extending nearly half its length, then passes obliquely to the dorsal margin. The ocelloid patch is clearly defined, grey, and bordered with white; on its inner edge is a small round reddish spot. The costa is streaked with black on its basal half, and beyond the middle it is marked with four lustrous yellow geminations, all directed and produced into dusky lines to a point in the margin, below the apex; the apical spot distinct, and of a deep brick-red colour. Apical scales shining, with two yellow streaks below the apex running through them and the cilia, then dark grey, becoming paler at the anal angle; all with white tips. Cilia below the interruptions yellowish pink, then grey at the anal angle, and blackish beyond. Posterior wings dull fuscous. Marginal scales shining, fuscous, with luteous bases. Cilia shining, grey, with a fuscous tinge. Abdomen fuscous, the caudal tuft yellow. ♀ Exp. al. 6–7 lin.

An uncommon species, but not variable. It is larger than *Anch. Lundana*, though otherwise much like it; the latter has the patch on the costa beyond the middle much paler, and not sharply defined on its inner edge; whilst in *A. derasana* it is of the same colour as the basal patch, and as clearly defined.

The imago appears in June and July, in hedges and woods, in the south of England; it is rare in the north, but has been captured in Scotland.

11. *obtusana*, Haw. Alis anticis rufis; fascia irregulari cinerea albida cincta, a basi costæ flexuosa ad angulum analem; posticis cinereo-fuscis. ♂ Exp. al. 5 – $5\frac{1}{2}$ lin.

Head ochreous, approaching ferruginous, palest at the base. Face drab. Eyes black. Palpi grey, drab at the base beneath. Antennæ shining, pale brown, palest at the base; basal joint clothed with shining drab scales. Thorax ochreous or ferruginous. Patagia

paler than the thorax. Anterior wings glossy, pale drab, with deep red markings. At the base is a large semicircular patch sharply defined at its outer portion, tawny at the base near the costa, and merging from thence into deep rich brick-red at the dorsal margin. Near this patch, and commencing on the costa, is another, larger and similarly-coloured, its inner edge running parallel with the outer boundary of the basal one to near the dorsal margin; it then curves with a rounded bend towards the costa near the apical margin, where it again assumes a downward oblique direction, terminating above the anal angle; a silvery-lustred streak or stripe speckled with black divides these two patches, and follows the lower edge of the posterior one to the anal angle, at which there is an obscure red elongated spot, sometimes speckled with cream-colour and black. The costa is spotted with black to near the middle; beyond, it is marked with four pairs of cream-coloured streaks (in some lights having a silvery appearance); the innermost pair unite, and are produced in a metallic lustred line to just below the apical spot, which is very distinct. There are some longitudinal black streaks in the middle of the apical region. Apical scales brick-red at the apex, and iron-grey below the white streak under the apical spot. Cilia: above the interruption white, with ferruginous tips; below iron-grey, merging rapidly into cream-colour, speckled with grey at and beyond the anal angle. Posterior wings deep brown, darkest at the apex. Marginal scales deep brown, with cream-coloured bases. Cilia pale grey in the middle, the apices and bases straw-colour. Abdomen deep brown, the caudal tuft drab. ♀ Exp. al. 5-5½ lin.

Tolerably constant in colour, but rather variable as to size. It is much like *A. Mitterbacheriana* and *A. comptana*; it is *smaller and darker than the former*, and at once distinguished by the *curved and hooked band across the wing*; and from the latter by the *obtuse apex to the anterior wings, and the darker colour of the posterior ones*.

The imago appears from June to August, in the south and south-west of England, and in the Midland Counties.

12. *comptana*, Fröl. Alis anticis cinereis; basi marginis dorsalis macula magna castanea ustulata; postice lineis brunneis obliquis; apice strigis geminatis costalibus; macula brunnea ad angulum analem; posticis maris griseis; fœm. saturatoribus. ♂ Exp. al. 5-5½ lin.

Head dusky chocolate-brown. Face rather paler. Eyes black. Palpi drab, slightly fuscous at the apex, paler beneath. Antennæ dark fuscous, shining, paler beneath. Thorax chocolate-brown. Patagia paler. Anterior wings white or drab, with dull chocolate and brown markings. At the base is a semi-ovate patch of dull choco-

late-colour extending to the middle of the dorsal margin; the apical portion of the wing towards the costa is occupied by a large dusky ferruginous-brown cloud; this is separated from the basal patch by a broad silvery-lustred band, which attains the dorsal margin, and then curves upwards, and encloses an elongated brown spot at the anal angle; this band is thickly irrorated with dusky atoms throughout its course. The costa is marked with geminated lustrous streaks just before and beyond the middle; those beyond are four in number, produced, and converge to a point below the apical spot. Apical scales (and the cilia) interrupted below the apical spot by two dusky streaks running through them; at the interruption they are white, straw-colour *below*, with the bases dusky. Cilia straw-colour, with fuscous bases. Posterior wings pale fuscous, with a pearly lustre. Marginal scales fuscous, with straw-coloured bases. Cilia pale grey. Abdomen shining, pale fuscous, the caudal tuft sub-ochreous. ♀ Exp. al. 5-5½ lin. In general colour more dusky than the ♂.

The smallest British species of this genus; tolerably constant as to size, but varies in the intensity of its markings. It is a common species, and was first noticed by Mr. Douglas in 1842. Very like *A. obtusana*; but the *grey colour of the underwings* is a distinguishing character.

The imago appears in April and May, and again in August, there being two broods in the year. It occurs in the Isle of Wight and along the south of England, on the chalk; at Sandstead, Stoa's-nest, Riddlesdown, Mickleham, &c.

13. *siculana*, Hub. Alis anticis rufo-cinereis; stria longitudinali albida, alis brunneis fractis adnatis, macula ocellari ad angulum analem cinerea; posticis fusco-griseis. ♂ Exp. al. 7-8 lin.

Head dull chocolate-brown, palest over the eyes. Face slightly paler than the head. Eyes black, with a velvety appearance. Palpi fuscous above, at the sides, and beneath; between sub-ochreous. Antennæ umber, paler beneath. Thorax dull chocolate-brown in front, paler behind. Patagia drab, inclining to ochreous. Anterior wings drab, with an ochreous tinge, marked with longitudinal bands of brown and fuscous. The costa is broadly pale fuscous, and marked throughout with geminated streaks, brown interspaces, the centre one being broad, conspicuous, and very obliquely produced towards the apical margin, as also are the streaks beyond it, these latter being lustrous. From the middle of the base to near the apex is a broad straw-coloured band; below this is an umber streak, forked, and divided beyond the middle, and extending to the apex; the remainder of the wing is suffused with pale fuscous, with a threadlike streak of brown running along the median fold, the dorsal margin finely maculated with dark brown. The ocelloid patch is grey, and has within a

brown spot, bordered with white; the apical margin edged with dark brown. Apical scales and cilia straw-colour, the latter slightly dusky, both interrupted by a fine brown streak running through them below the apex. Posterior wings pale grey, with a pearly lustre. Marginal scales and cilia paler grey, the former with the bases pale straw-colour. Abdomen fuscous grey, the caudal tuft drab. ♀ Exp. al. $6\frac{1}{2}$ – $7\frac{1}{2}$ lin.

A very common species, and tolerably constant, both as to size and colouring; distinguishable from its congeners by the *longitudinal brown streak* upon the anterior wings.

The imago appears in May and June, flying in the evening over heathy places. It occurs at Birch, Darenth, and Dulwich Woods, Plumstead and Wimbledon Commons, New Forest, and throughout the country, especially in the north of England.

In the North the larva feeds on *Myrica Gale* (the Sweet Gale), but we are not aware on what other plants it feeds in the South, where the Sweet Gale does not grow.

14. *unguicella*, Linn. Alis anticis nitidis cinereis; fascia strigata basi, alteraque sæpe interrupta pone medium brunneis; posticis cinereis aut fusco-cinereis. ♂ Exp. al. $6\frac{1}{2}$ – $7\frac{1}{2}$ lin.

Head dark fuscous. Face slightly paler. Eyes black. Palpi: above, at the sides, and beneath, dull fuscous, pale grey at the base between. Antennæ umber, paler beneath. Thorax dark fuscous. Patagia slightly paler. Anterior wings drab, streaked and marked with golden brown; at the base is a streaked brown patch, extending one-fourth along the costa and nearly to the middle of the dorsal margin, its posterior edge rounded (in some specimens it is much angulated). From the middle of the costa to within the anal angle on the dorsal margin proceeds an angulated fascia, edged posteriorly with white. The ocelloid patch is grey, more or less clouded with fuscous and white, and streaked with lustrous scales. The costa is sharply and thickly marked with geminated streaks, those beyond the middle being white, lustrous, and most distinct; they are more or less produced along the apical portion of the wing. The apical spot is distinct, and below it is a white patch, with two (sometimes only one) black streaks running through it. The pale portions of the wing much clouded with fuscous, and the dorsal margin regularly maculated with brown. The apical margin is black, in some specimens brown. Apical scales yellowish. Cilia fuscous, variegated with brown, sometimes ochreous. Posterior wings shining pale fuscous, darkest at the apex. Marginal scales straw-colour. Cilia very pale grey, with a fuscous tinge. Abdomen fuscous, the caudal tuft drab. ♀ Exp. al. 6 lin. Head, face, and palpi white; anterior wings white, the basal patch not attaining the costal margin; other-

wise marked as in the ♂. Apical scales and cilia white. Posterior wings darker than in the ♂. Marginal scales and cilia white, or very pale straw-colour.

This species varies considerably in size as well as in colour. It is not of very frequent occurrence in the South, but is tolerably abundant in some parts of Scotland. It is distinguishable from all the other British *Anchyloperæ* by the *oblique fascia across the wings* beyond the middle.

The imago appears in May and June in heathy places. It occurs at the New Forest, and in the North of England, on the "Mosses." In Scotland, at Airthry, Ambleside, and on the Pentland Hills; at the latter locality in abundance.

Genus IV. BACTRA, STEPHENS.

Antennæ very long and slender, pubescent. Palpi longer than the head, stout, porrected horizontally, remote, clothed with long scales above and beneath towards the apex. Basal joint moderately stout, oblong, drooping, truncate; apical slender, obovate, longer than the basal; middle very stout, beyond the middle ascending, curved, scarcely three times as long as the apical. Maxillæ shorter than the palpi. Thorax slender ovate. Anterior wings: length more than twice the width; costa regularly arcuated; apex *acute*; apical margin *entire, oblique*; dorsal margin rounded. Venation normal. The discoidal cell extends two-thirds along the wing. Posterior wings long; apex *acute*; apical margin *concave*; dorsal margin *entire*. Abdomen long and slender, rather stouter in the ♂, tufted in *both* sexes.

This genus is associated with the preceding in consequence of the acutely-formed apex to the anterior wings, which, however, is *not produced*, but, with the *entire* apical margin forms a very sharp angle, and imparts to the wings a similar appearance to those organs in *Anchylopera*. The species are of dull colours, very simple markings, and subject to considerable variation in both respects. They may be met with throughout the summer months, frequenting damp places. The larvæ are but imperfectly known.

The three British species are thus tabulated:—

- | | |
|--|-----------|
| A. Anterior wings <i>pale</i> , with (in the ♀) a conspicuous black spot on the disk | Species 1 |
| B. Anterior wings <i>dark</i> , with a <i>blackish spot</i> or mark in the centre | Species 2 |
| C. Anterior wings dark, <i>clouded</i> with brown | Species 3 |

1. *uliginosana*, Bentley MSS. Alis anticis *maris* pallide ochraceis brunneo nebulosis; atomis nigris sparsis. *Floeminae* medio puncta brunnea oblonga; posticis albicantibus, margine fuscescentibus; atomis nigris sparsis. ♂ Exp. al. 7-7½ lin.

Head grey or pale ochreous. Face pale ochreous. Eyes black. Palpi: above pale ochreous, slightly brown at the apex. Antennæ fuscous. Thorax and patagia pale ochreous. Anterior wings slightly glossy, pale ochreous, mixed with pale brown, the venation paler, and distinctly appearing; the surface sparingly dotted with black, more so at the apex, and in the centre of the disk are one or two dots, scarcely distinguishable from the rest as to size. Apical scales same as the ground-colour of the anterior wings. Cilia paler. Posterior wings very glossy, slightly pearly white, with a fuscous tinge, darkest at the apex, where they incline to ochreous, sparingly dotted with black, especially towards the apex. Marginal scales and cilia paler. Legs straw-colour. Abdomen ochreous grey at the base, merging into fuscous towards the apex; the caudal tuft ochreous. ♀ Exp. al. 7-7½ lin. Thorax with a transverse fuscous band across the middle. Anterior wings, as in the ♂, with the addition of a distinct irregularly oval umbreous spot above and beyond the middle of the disk.

A very rare species, but apparently not variable. The original specimens in the Bentleyan Collection (Mr. Edwin Shepherd's) were taken many years ago near Yaxley. More recent specimens have been taken near Ely in Cambridgeshire, and this year (1858), two specimens are recorded as having been captured at West Wickham Wood: *vide* 'Entom. Weekly Intelligencer,' vol. v. p. 20.

The imago appears in June and July, frequenting boggy places.

2. *lanceolana*, Hub. Alis anticis cinereo rufescentibus, strigulis numerosis obliquis fuscis; medio punctis duabus vel maculis fuscis longitudinaliter dispositis; posticis cinereis. ♂ Exp. al. 6½-7½ lin.

Head and face varying from ochreous to fuscous. Eyes black. Palpi drab above, at the sides, and beneath; paler between. Antennæ fuscous. Thorax dusky drab or fuscous. Patagia same colour as the thorax, with the tips paler. Anterior wings drab, more or less dull, finely streaked with fuscous along the costa, and the whole surface more or less freckled with the same colour; along the apical margin is a row of fuscous dots, most conspicuous towards the anal angle. In some specimens there runs a dusky-brown streak from the middle of the base to the middle of the wing, which is sometimes continued faintly to the apex; this streak is more or less distinct, sometimes assuming the form of two irregular patches, one situated

one-third from the base, the other one-third from the apex; these are sometimes nearly obsolete, and sometimes the posterior mark, which is the largest, is only visible. At the anal angle is a faint indication of the ocelloid patch, which is oval. Apical scales pale drab, with fuscous tips. Cilia fuscous at the apex, dusky drab along the margin. Posterior wings pale fuscous. Marginal scales and cilia dull straw-colour. Abdomen fuscous; the caudal tuft ochreous drab. ♀ Exp. al. $6\frac{1}{2}$ - $7\frac{1}{2}$ lin.

A very abundant species, variable in size as well as in the intensity of the colours. The ground-colour of the anterior wings ranges from drab to ochreous, more or less mixed with fine fuscous markings. There appear to be two broods in the year, one in the spring, the other in the autumn, the former attaining larger dimensions than the latter. There have been several varieties assigned to this species, some of them apparently applied to the ♀; the most remarkable of which is the var. *plagana*, which has a dark longitudinal *uninterrupted, broadish streak from the base to the apex*. The insect figured in 'Curtis's B. E.' pl. 599, can only be considered as a pale variety of this species; it is, however, remarkable that in the North of England and in Scotland, this form assumes a permanence.

The imago frequents low swampy places where rushes grow, and the first brood appears in May and June, the second in August and September. It is very generally distributed, occurring also in Scotland and Ireland.

According to Mr. R. F. Logan, the larvæ feed on the Rush (*Juncus glomeratus*). "It is green, with a black head and black tubercles, and completes its transformations in a white silken folliculus within the stem, near the root, and the pupa is amber-colour, and remarkably straight and cylindrical": *vide* 'Entom. Weekly Intell.' vol. i. p. 110; but it would appear, from further observations by Mr. John Scott, of South Stockton, *l. c.* p. 28 and p. 164, that the larva is pale, with a pinkish tinge on the back, with the head, a large patch on the corselet, and anal segment shining pitchy black, and that the tubercles are brown. The pupa, he says, is brown, not amber-coloured. Are there, then, two species mixed up under the name of *lanceolana*? This we think may be probable, as, surely, two such acute observers as Messrs. Logan and Scott cannot have made such mistakes about the larva; or do the larvæ of *B. lanceolana* differ in different situations?

Obs.—Mr. S. Stevens has captured some specimens of a *Bactra* in all respects like *B. lanceolana*, except that the ground-colour of the anterior wings is testaceous brown, and measuring from

8 $\frac{1}{2}$ –9 lines in expanse in the ♂, and from 11–12 lines in the ♀. They were taken in the month of July in the salt marshes on the banks of the Thames near Southend—a locality where a species is likely, among so much humidity, to attain to extraordinary dimensions.

3. *furfurana*, Haw. Alis anticis griseo-rufescentibus, nebulosis maculisque irregularibus brunneis; posticis cinereis. ♂ Exp. al. 6–8 lin.

Head ochreous, paler in front. Face ochreous above, paler below. Eyes black; palpi drab or fuscous above and at the sides, paler beneath and between. Antennæ fuscous. Thorax dull brown. Ptagia slightly paler. Anterior wings ochreous brown, clouded with dull brown markings, which are darkest at the base, and from the middle to the apex with a dark elongated mark at the anal angle, impinging on a very indistinct ocelloid patch. Costa and dorsal margins maculated with brown, the markings on the former more in the shape of streaks. Apical scales fuscous with drab bases. Cilia straw-colour with a grey tinge. Posterior wings dull fuscous. Marginal scales pale grey with straw-coloured bases. Cilia straw-colour. Abdomen and caudal tuft dark fuscous. ♀ Exp. al. 6 $\frac{1}{2}$ –8 lin.

A rare species, and subject to much variation in the intensity of its markings, as well as in size; readily distinguished from its congeners by the *mottled appearance* of the anterior wings.

The imago appears in May and June, and has been captured in Kent and in Devonshire, Probus in Cornwall, as well as other places in England. Mr. Bentley obtained his specimens from the reeds surrounding the freshwater lake at Napton Lee, in Devonshire, at the end of June (see Westwood and Humphrey's 'Bristol Moths,' ed. 1. p. 139). It occurs also at the Lea Bridge Marshes, near London, and in the vicinity of Edinburgh; likewise at Galway in Ireland.

Genus V. ARGYROTOZA, STEPHENS.

Antennæ very pubescent beneath. Palpi twice as long as the head, porrected upwards, remote, thickly clothed at the apex of the middle joint; basal joint drooping, pyriform, truncate; apical slender, cylindric, much longer than the basal; middle ascending, moderately stout, thickened beyond the centre, not three times the length of the apical. Maxillæ stout, as long as the palpi. Thorax moderately robust, ovate. Anterior wings scarcely twice so long as broad. Costa regularly arcuated. Apex acute; apical margin truncate, oblique; dorsal margin slightly rounded; venation normal. The

discoidal cell extends two-thirds the length of the wing. Posterior wings: apex acute, apical margin concave, basal angle produced. Abdomen slender and tufted at the apex in the ♂, slender and obtuse in the ♀

The only species known in this genus bears some resemblance in shape to the preceding, but is prettily marked with various colours and metallic lusted spots. Structurally it differs from *Bactra* in its *broader and shorter anterior wings, and their less acute apex.*

1. *Conwayana*, Fab. Alis anticis flavis, medio nubilis fulvis, ad apicem saturate brunneis, argenteo obsolete punctato-strigatis; posticis fusco-griseis, apice saturatoribus. ♂ Exp. al. $5\frac{1}{2}$ – $6\frac{1}{2}$ lin.

Head pale ochreous, sometimes slightly fuscous behind. Face pale ochreous above, paler below. Eyes black. Palpi twice the length of the head, whitish above, between and beneath, dusky at the sides. Antennæ above pale ochreous, alternated with brown, except a few joints at the base; beneath fuscous, the basal joint ochreous or straw-coloured. Thorax ochreous, dusky in front, and with a dusky transverse band across the disk. Patagia ochreous, sometimes speckled with dusky scales. Anterior wings bright yellow, the costal and dorsal margins maculated with black; the base is clouded with ochreous, with one or two blackish streaks followed by a ferruginous, curved fascia before the middle; beyond the middle of the wing is a ferruginous cloud, uniting with the basal fascia, thus leaving a pale space on the costa (this sometimes wanting) with another on the dorsal margin, the former being irregularly trigonate, the latter roundish (very frequently the apical half is wholly suffused with dark or castaneous brown), at the subapical portion of the costa are one or two yellow marks; the rounded dorsal mark is palest towards the base, and very frequently it has one or more blackish streaks running through it. The disk of the wing is studded with small patches of lustrous blue scales, bright in fresh specimens, but they soon become abraded. Apical scales orange; cilia slightly paler, both becoming grey at the anal angle. Posterior wings deep fuscous, paler at the base. Marginal scales deep fuscous, with pale bases. Cilia grey at the apex and towards the anal angle, white between. Abdomen deep fuscous. ♀ Exp. al. $5\frac{1}{2}$ – $7\frac{1}{2}$ lin. In general colour paler than the ♂.

A common insect, and varies considerably in the colour and intensity of its markings; the ordinary form is that as above described, but there are two varieties, *A. Hoffmanseggiana* and *A. subaurantiana*.

A. Hoffmanseggiana differs from the type in being much darker, and in having the *anterior wings suffused*, but it is not of very frequent occurrence.

A. subaurantiana. The anterior wings are pale yellowish orange, sometimes drab, with slight indications of darker markings with silvery streaks or dots, very rare: the specimen in the Stephensian Cabinet at the British Museum was captured at Darenth Wood. It is also in the Cabinets of Messrs. Edwin Shepherd, William Machin and others.

The imago appears in June throughout the metropolitan district; it occurs also at Birch and Darenth Woods, in the New Forest, Devonshire, near Dover, in Cheshire, and in other parts of the country; likewise in the vicinity of Edinburgh and in Ireland.

Genus VI. DICTYOPTERYX, STEPHENS.

Palpi twice as long as the head, compressed, porrected horizontally, or slightly ascending, approximate, clothed with long scales partly enveloping the apical joint; basal joint drooping, moderately stout, pyriform, truncate; apical slender, cylindrical, much longer than the basal, horizontal; middle ascending, stout, nearly straight, thickened beyond the centre, not quite three times the length of the apical. Maxillæ slender, as long as the palpi. Thorax slender, ovate, with a small crest or tuft behind. Anterior wings: length equals twice the breadth; costa arcuated, obtuse at the base; apex produced; apical margin entire (in *D. Læflingiana* truncate and oblique); dorsal margin nearly straight. The discoidal cell is situated towards the middle of the wing, and extends two-thirds its length. The subcostal nervures equidistant, the first inserted at the middle of the subcostal vein. Posterior wings ample; apex acute; apical margin concave. Abdomen stoutest in the ♀, tufted in both sexes.

The insects in this genus, as determined by the late J. F. Stephens in the Museum Catalogue, are remarkable for the net-like markings on the anterior wings; but the structure of the wings themselves differs very considerably, so much so that it has been considered necessary to remove from it one of the Stephensian species (*Forskaliana*),—although, in the markings, more reticulated than the rest of his genus,—and to associate it with *C. Bergmanniana*, which it not only resembles, but bears considerable natural affinity to it. Of the three remaining species, *contaminana* and *Shepherdana* are well associated; but we think that for *Læflingiana* another position must ultimately be found; perhaps a distinct genus.

The British species are thus arranged :—

- A. Anterior wings with the ground-colour yellow ferruginous or ochreous, *reticulated, and with distinct darker markings* Species 1, 2
 B. Anterior wings pale yellow, *with darker reticulations, and clouded with fuscous or leaden-coloured markings* Species 3

1. **contaminana**, Hub. Alis anticis læte stramineis; brunneo-reticulatis; media fascia ad costam bifida, strigaeque basi angulata saturate fuscis; posticis albicantibus; subtus strigulis cinereis. ♂ Exp. al. 7–9 lin.

Head slightly ochreous, or dusky yellow. Face of same colour, but slightly darker. Eyes intense purple brown, with a velvety appearance. Palpi: above and at the sides pale ferruginous; beneath pale ferruginous at the apex, straw-colour at the base. Antennæ fuscous, with the basal and a few succeeding joints above ferruginous, the basal joint beneath straw-colour. Thorax and patagia pale ochreous, with a ferruginous tint; the former with a simple carinated ferruginous crest on the vertex. Anterior wings bright straw-colour, strongly and distinctly reticulated with red or ferruginous brown, the reticulation following the venation of the wing; the costal and dorsal margins edged with reddish brown. Near the base is a strong streak angulated in the middle, and sometimes suffused and widened at its extremities; this streak, with a large Y-like mark beyond the middle of the wing, is dull chocolate-colour, with a leaden tinge; the Y-like mark does not always reach the dorsal margin. In fine specimens a few whitish, minute tufts of elevated scales are visible in the centre of the wing. Apical scales ferruginous brown, with paler bases. Cilia shining, pale straw-colour. Posterior wings with a shining, pearly appearance, the reticulation at the apex beneath, showing through. Marginal scales slightly grey, with pale bases. Cilia dirty white. Abdomen pale fuscous grey, the caudal tuft pale straw-colour. ♀ Exp. al. $6\frac{1}{2}$ – $9\frac{1}{2}$ lin.

A very common, and at the same time a variable insect; the variations from the type, as above described, are comprised in the varieties *D. ciliana* and *D. rhombana*.

In *D. ciliana* the ground-colour of the anterior wings is ferruginous, with the markings dark or chestnut-brown; but the colours are more or less intense in different specimens. Cilia whitish.

In *D. rhombana* the anterior wings are dark ferruginous, merging into fuscous, with a leaden tinge obscurely reticulated and fasciated with umber. Cilia whitish.

The imago frequents the Whitethorn, and occurs from July to October in tolerable abundance, especially in the metropolitan

district and the south of England ; it is also taken in Cheshire and in the North ; in Scotland, in the neighbourhood of Edinburgh ; and near Belfast in Ireland. We, some fourteen years since, took all the varieties in great numbers near Shooter's Hill in Kent.

The pupa measures $3\frac{1}{4}$ lines. Eye-cases black. Head, thorax, limb- and wing-cases shining, sordid olive-green colour. Abdomen dull chocolate-colour. It remains in this state about a month.

The larva feeds on the Whitethorn, Laurel, and Wild Apple, between united leaves. It is of a yellowish-green colour, 7 lines in length when full-grown. Head hazel-colour, shining ; labrum chestnut-colour ; shield very transparent, yellowish green, shaded with pale brown posteriorly ; spots small, concolorous, shining, elevated ; anal segment with a rugose, opaque, green patch not punctured ; hairs sulphur-coloured ; true legs with the bases of the joints broadly black. Before going into pupa it spins the leaves together with a lining of shining white silk.

2. *Shepherdana*, Step. *Alis anticis ochraceis aut ferrugineis brunneo reticulatis, nebulis tribus fuscis costalibus ; posticis albicantibus.* ♂ Exp. al. 6- $6\frac{1}{2}$ lin.

Head and face dull ferruginous. Eyes black. Palpi twice the length of the head, dull ferruginous. Antennæ fuscous. Thorax and patagia ferruginous, sometimes inclining to brown. Anterior wings dull ochreous, with the markings and reticulations umbreous. At one-third from the base is a fine, distinct, undulating streak ; another straighter one before, and a third one beyond the middle ; the latter much diverted in its course towards the apex, all reaching the dorsal margin. Between these last two is a brown undefined cloud ; the apical margin umbreous. Apical scales ferruginous, with pale bases. Cilia same colour, but rather paler. Posterior wings glossy, whitish at the base, with a slight smoky appearance at the apex, and reticulated with fuscous, the reticulations showing through from the under-surface ; the margin with a fine fuscous line. Marginal scales fuscous, with pale bases. Cilia pale straw-colour, inclining to ochreous at the apex. Legs straw-colour ; tarsi alternated with fuscous. Abdomen shining grey at the base, approaching to fuscous towards the apex ; the caudal tuft ochreous. ♀ Exp. al. 6- $6\frac{1}{2}$ lin. Anterior wings have the ground-colour more brown than ochreous, but the markings are the same.

Very rare ; constant in colour and markings.

The imago was bred in 1851 by Mr. Edwin Shepherd from larvæ feeding in the flower-heads of Hemp Agrimony (*Eupatorium cannabinum*). It has since been bred by Mr. J. B. Hodg-

kinson from larvæ found in June at Lytham, Lancashire, feeding on the Meadow Sweet (*Spiræa Ulmaria*).

3. *Lœflingiana*, Linn. Alis anticis testaceo flavis; strigulis ochraceis literaque χ duplici medio costæ rufescentibus; posticis griseis.
♂ Exp. al. 8 lin.

Head and face testaceous yellow. Eyes black, with a velvety appearance. Palpi: above, beneath and between, same colour as the head, somewhat darker at the sides. Antennæ straw-colour above, fuscous beneath; basal joint beneath, straw-colour. Thorax and patagia testaceous yellow, slightly darker in front. Anterior wings glossy testaceous yellow, with ochreous interrupted wavy streaks and reticulations, and slightly leaden-coloured markings on the costal margin; these latter are very varied in intensity and form, but usually assuming the shape of the Greek letter χ ; they are two in number, one situated before, the other beyond, the middle, preceded and succeeded by similar-coloured undefined markings; these costal markings are more or less produced, in different specimens, towards the dorsal margin. Apical scales of a leaden-brown tinge. Cilia dull straw-colour. Posterior wings pale shining grey, clothed with coarse fuscous scales. Marginal scales fuscous, with luteous bases. Cilia straw-colour. Abdomen pale shining grey, the caudal tuft straw-colour. ♀ Exp. al. 8-9 lin.

A common and variable species, in some of its aspects resembling *D. contaminana*, but distinguishable therefrom by the paler ground-colour of the anterior wings, the less distinct reticulation, and by the *truncate apical margin*. The named varieties are *D. ectypana*, *Lœflingiana*, and *plumbana*.

D. ectypana (Hub. To. t. 30. f. 190) has the markings of the anterior wings nearly obsolete, but most visible on the costa.

D. Lœflingiana: the typical insect as above described.

D. plumbana has the markings, as the name implies, of a leaden hue, and are *broader and more suffused than in D. Lœflingiana* proper.

The imago appears from June (Haworth says as early as April) to September, in various parts of the country, but more particularly in the south, and within the metropolitan district.

The pupa is ferruginous brown, and measures 4 lines.

The larva feeds on Hornbeam, Oak, &c. It is about 6 lines in length, pale green, with black spots; the sides yellowish. Head and shield black; the latter pale anteriorly. Before assuming the pupa state it spins a *dead-white* silken web.

Genus VII. **CRÆSIA**, HUBNER.

Palpi longer than the head, slender, appressed, porrected horizontally; basal joint elongate, drooping, pyriform, truncate; apical ovate, minute, not so long as the basal; middle ascending, curved, slightly thickened towards the apex, more than five times as long as the apical. Maxillæ as long as the palpi. Thorax stout, ovate. Anterior wings: length equals twice the width; costa arcuated, somewhat abruptly so towards the base; apex obtuse; apical and dorsal margins nearly straight; anal angle produced. The discoidal cell is situated towards the middle of the wing, and extends scarcely two-thirds of its length. The costal vein reaches to the middle of the costa; the subcostal nervures equidistant. Posterior wings ample; apex obtuse; apical margin concave. Abdomen tufted in the ♂; stoutest and obtuse in the ♀.

The species comprised in this genus differ structurally from the preceding by the obtusely-produced anal angle of the anterior wings (except in *C. Holmiana*), and by the greater length of the middle joint of the palpi. The insects in Section B., and part of Section A., of the following table, are ornamented with streaks and clouds of a metallic lustre. The species 1 and 2 are well associated, both in the form of the imago, and in the habits of the larvæ; but it may, hereafter, be found requisite to find some other location for species 3.

The three species included in this genus are thus tabulated:—

- | | | |
|----|--|-----------|
| A. | Ground-colour of the <i>anterior wings yellow</i> , reticulated with red brown or fulvous. | |
| | a. <i>With metallic</i> lustred markings | Species 1 |
| | b. <i>Without metallic</i> lustred markings | Species 2 |
| B. | Ground-colour of the <i>anterior wings ferruginous</i> or brownish red, with leaden clouds, and a <i>white triangulate mark</i> at the centre of the costa | Species 3 |

1. **Bergmanniana**, Linn. Alis anticis læte flavis, nubilis strigis fulvis lineisque argenteis impositis; posticis fusco-griseis. ♂ Exp. al. 6 lin.

Head and face lemon-yellow, the latter sometimes orange below. Eyes black. Palpi above lemon-colour, sometimes pale orange; at sides rich orange; pale lemon beneath. Antennæ: above drab, with the basal and a few succeeding joints lemon-colour, beneath fuscous. Thorax lemon-colour; the crest behind rich orange. Patagia lemon-colour. Anterior wings lemon-colour, reticulated, and suffused with rich orange and ochreous brown, with pale violet lustrous markings. The costal and apical margins more or less ferruginous brown; the reticulations are towards the apex of the wing, and follow the vena-

tion. Before and beyond the middle of the costa proceed two slender curved fasciæ, which attain the dorsal margin, suffusing in their course; viewed obliquely, the darker markings are found to be possessed of a pale violet lustrous tinge, brightest at the apical margin. Apical scales lemon-coloured, merging into ferruginous towards the anal angle. Cilia lemon-colour, becoming dull grey at the anal angle. Posterior wings somewhat dull, pale grey, clothed with coarse fuscous scales. Marginal scales dull, fuscous, with luteous bases. Cilia pale grey. Abdomen shining grey; the caudal tuft pale straw-colour. ♀ Exp. al. 6-6½ lin. Anterior and posterior wings as in the ♂; the colouring warmer, and the lustrous markings more distinct.

An exceedingly common insect, but tolerably constant in its colours and markings, which, however, vary a little in intensity.

The imago appears from June to August, especially in Rose gardens. It occurs throughout England, but more plentifully in the south. In Scotland it is taken in the neighbourhood of Edinburgh and at Dalmeny; also near Dublin.

The pupa is 3½ lines in length, of rich ferruginous brown, with a chestnut-coloured patch on each side, near the head.

The larva is full-grown about the end of May, and is then 5 lines long; of a pale yellowish-green colour; the head shining jet black; shield black, divided by a pale dorsal line; feeds on various species of Rose, on the leaves, and sometimes in the flower-buds; occasionally very destructive. When about to assume the pupa state, it frequently folds the terminal leaf longitudinally along the midrib, and slightly fastens to it the contiguous leaves; it afterwards goes into pupa at the base of the folded leaf, but before the imago emerges it wriggles to the top, and the puparium may be found projecting almost wholly out of the leaf.

2. **Forskaleana**, Linn. *Alis anticis testaceo-flavis aurantiacis reticulatis; medio costæ striga, macula magna ad marginem dorsalem margineque apicali saturate cinereis; posticis flavis, basi albicanibus.* ♂ Exp. al. 5-7 lin.

Head and face pale yellow. Eyes obscure brown, with a velvety appearance. Palpi above, beneath, and between, yellow; at the sides, orange at the apex. Antennæ yellow, paler beneath. Thorax and patagia yellow, with a transverse orange-coloured band across. Anterior wings yellow, thickly reticulated with red brown or orange. On the dorsal margin is a large oblique dusky-grey blotch, extending to the middle of the wing; meeting this in a contrary direction is a straight oblique streak, irrorated with fuscous; apical margin irrorated with iron-grey; sometimes the dorsal patch is only faintly re-

presented, at others almost entirely absent, or one or two black spots in its stead. Apical scales orange, cilia white, both merging into grey *at* and *beyond* the anal angle. Posterior wings shining pale yellow, whitish at the base. Marginal scales paler. Cilia white. Abdomen and caudal tuft yellow. ♀ Exp. al. 5-7 lin. Anterior wings marked and reticulated as in the ♂, but with the slender costal streak and dorsal blotch very much darker; this latter is sometimes of a deep fuscous brown and not reticulated like the remainder of the surface.

A very common insect, and distinguished from all the other species of the genus by its smaller size and the beautiful sharp reticulation of the anterior wings.

The imago appears in June and July among Maple (*Acer campestre*), and occurs chiefly in the south of England and in the metropolitan district, also in Cheshire.

The pupa is yellow, of the same colour as the imago, the wing-cases of richer tint than the abdomen. The puparium or outer covering is very diaphanous, and of a dirty-white colour, thus permitting the enclosed insect to be seen through it. It is about 4 lines in length.

The larva is to be found full-fed towards the end of June in the folded leaves of the Maple: while feeding it rolls the leaves clumsily and longitudinally. In colour it is pale transparent yellow, brighter at the extremities. The head pale yellowish green, immaculate and shining; labrum yellow; mandibles brown; the shield is slightly greener than the head; the spots on the body are very minute and whitish. Before assuming the pupa state it *neatly folds one of the lobes* of the Maple leaf and *spins it closely down with a white shining silk*.

Obs. :—It is remarkable that the larva, pupa, and imago of this species are all of the same colour: a coincidence, we believe, which does not occur in any other known British species among the *Tortricina*.

3. *Holmiana*, Linn. Alis anticis aurantiacis apice plumbeis; macula dentiformi pone medium costæ nivea; posticis griseis, apice saturatoribus. ♂ Exp. al. 6 lin.

Head and face dull testaceous yellow, or pale ferruginous, the latter slightly paler below. Eyes black. Palpi above and at the sides same colour as the head, beneath straw-colour at the base, slightly ferruginous at the apex. Antennæ drab above, fuscous beneath, the basal joint, and a few succeeding ones above, clothed with ochreous scales. Thorax variable, from testaceous yellow to reddish ochreous, usually darkest in front. Patagia same colours as the thorax. Ante-

rior wings: ground-colour orange, thickly suffused with bright pale reddish brown, a snow-white trigonate patch, like a shark's tooth, on the middle of the costa, frequently edged with black scales, and with pale-violet lustred fasciæ and markings; these latter are visible only when viewed obliquely, and are thus disposed: a cloud at the base, followed by a broad, nearly isometric fascia before the costal patch, from the apex of which proceeds another but irregular fascia towards the anal angle, mostly furcate on the dorsal margin; beyond this is a narrow, nearly straight fascia, extending from the costa to the apical margin, just above the anal angle, succeeded by a few spots in the apical angle. The apical portion of the wing sometimes irrorated with black scales. Apical scales slightly ferruginous, with orange bases, cilia rich straw-colour, both becoming iron-grey at the anal angle. Posterior wings pale grey, clothed with coarse fuscous scales. Marginal scales dull grey, with paler bases. Cilia dirty white. Abdomen and caudal tuft dull straw-colour. ♀ Exp. al. $6\frac{1}{2}$ –7 lin. Anterior wings marked and coloured like the ♂, but with the violet lustred fasciæ, &c., usually more sharply defined.

A common insect, not variable, and easily distinguished by the *snow-white trigonate patch in the middle of the costa*.

The imago appears in June and July in tolerable plenty in gardens and hedges, in the metropolitan district; near Hertford; in Cheshire, and other parts of the country. It occurs also in Scotland in the vicinity of Edinburgh, and near Belfast in Ireland.

The larva feeds on the Rose, Apple and Pear, and perhaps upon the Sloe; it is of a yellow colour, with the head hazel or pale reddish brown, and about 5 lines in length.

Genus VIII. HEMEROSIA, STEPHENS.

Antennæ very stout. Palpi longer than the head, stout, approximate, porrected horizontally; basal joint somewhat elongate, pyriform, drooping, truncate; apical oval, much shorter than the basal; middle ascending, as stout as the basal and thickening beyond the centre, scarcely four times as long as the apical. Maxillæ longer than the palpi. Thorax robust, ovate. Anterior wings, length more than twice the width; costa slightly arcuated; apex obtuse. Apical and dorsal margins rounded. The discoidal cell is situated in the upper half of the wing and extends two-thirds its length: subcostal nervures equidistant. Posterior wings ample, apex subacute; apical and dorsal margins entire. Abdomen moderately stout in both sexes, tufted in the ♂.

Formerly incorporated in the genus *Argyrotoza* by the late J. F. Stephens, but widely separated from it in the Museum Catalogue under the above name. The insects comprised in these genera, however, possess several characters in common: their points of difference are, that the anterior wings are longer, and the apical margin rounded in *Hemerisia*, whilst in *Argyrotoza*, the latter is obliquely truncate. The middle joint of the palpi in *Argyrotoza* is considerably shorter in relation to the apical than in this genus (*Hemerisia*).

1. **Rheediella**, Clerck. Alis anticis basi nigro-fuliginosis, apice rubris; posticis subnitidis nigro-fuliginosis. ♂ Exp. al. $4\frac{1}{2}$ lin.

Head and face smoky brown. Eyes black. Palpi longer than the head, dull smoky brown, slightly glossy beneath. Antennæ glossy, smoky black. Thorax and patagia dull dark brown, with a purplish tinge; anterior wings glossy, smoky umber, with a purplish shade, softening into rich orange or brick-red at the apex; on the apical portion of the costa are two or three faintly-defined streaks, of a slightly paler hue; apical scales dull red. Cilia glossy, iron-grey at the apex, slightly fulvous along the margin, becoming again iron-grey beyond the anal angle. Posterior wings variable, sometimes chocolate brown, at others golden brown, with a darker softened cloud near the anal angle. Marginal scales brown. Cilia straw-colour, glossy. Abdomen dark umber. ♀ Exp. al. 5 lin.

Not a common species, constant in size and colour.

The imago appears in May and June. It occurs at Coombe, Birch, Greenhithe, and Darent Wood; at Riddlesdown, Lewisham, and near Ripley; in Devonshire, Cheshire, at Meonstoke, and in the New Forest. It likewise occurs in the vicinity of Edinburgh, and at Holywood, Co. Down, in Ireland.

The larva feeds on the leaves of the Apple and Service tree, and we are credibly informed that it burrows into the bark to undergo its final change.

FAMILY IV. PERONEIDÆ.

The insects comprised in this group are characterized by the presence of tufts of elevated scales on the anterior wings (*Cheimatophila* excepted), by having the costa slightly incised or emarginate in the middle (in *Teras* considerably so), and being always obtusely dilated towards the base, *where*, as well as *towards the apex*, it is *roughly clothed with scales, but never marked with*

geminated streaks. The posterior wings are large and broad, of pale colour, have a peculiar glossy appearance, with the basal angle enlarged. In repose they always sit very close to the plane of position, and hold their wings but very slightly deflexed, especially their posterior portion. *Peronea Hastiana* sits with its anterior wings overlapping.

Larvæ for the most part known; they feed between united leaves.

This family contains five genera, which are thus tabulated:—

- A. Anterior wings *without tufts of elevated scales on their upper surface.*
- a. Palpi *twice as long as the head.*
- a a. With the *middle joint four times as long as the apical* 1. CHEIMATOPHILA.
- B. Anterior wings *with tufts of elevated scales on their upper surface.*
- b. With the *costa clothed roughly with scales at the base and apex, and slightly incised in the middle.*
- c. Palpi *longer than the head.*
- d. With the *middle joint three times as long as the apical* 2. OXYGRAPHA.
- c c. Palpi *twice as long as the head.*
- d d. With the *middle joint three times as long as the apical* 3. PERONEA.
- d d d. With the *middle joint four times as long as the apical* 4. PARAMESIA.
- b b. With the *costa roughly clothed with scales at the base and apex, and MUCH incised in the middle.*
- d d d d. Palpi with the *middle joint four times as long as the apical* 5. TERAS.

Genus I. CHEIMATOPHILA, STEPHENS.

Palpi twice as long as the head, remote, slightly drooping, clothed with scales beneath to the base, and very thickly so towards the apex; basal joint drooping, pyriform, truncate; apical obovate, longer than the basal; middle very stout, thickened *before, at and beyond* the centre, curved, four times as long as the apical. Maxillæ short. Thorax slender, ovate. Anterior wings without tufts of elevated scales, length exceeding twice the width. Costa arcuated, obtuse towards the base; apex slightly produced; apical and dorsal margins rounded. The costal vein reaches the margin at the middle, subcostal

nervures not equidistant; the discoidal cell situated towards the centre of the wing but not extending two-thirds its length. Posterior wings obovate; apex obtuse; apical and dorsal margins entire, the anal angle slightly produced. Abdomen long and slender, tufted at the apex in both sexes.

Although in some respects differing in its characters, we consider this genus locates well with the *Peroneidæ*, and like them, the perfect insect appears late in the autumn. The *smooth costa* and *non-tufted* anterior wings sufficiently remove it from any of the succeeding genera.

There is at present but one known British species.

1. *mixtana*, Hub. Alis anticis argenteo-niveis; castaneo irregulariter marmoratis; posticis griseis. ♂ Exp. al. 7-8½ lin.

Head and face rich chocolate-brown. Eyes black. Palpi rich chocolate-brown above, at sides, and between at the tips; white at the base, between and beneath. Antennæ shining deep fuscous; the basal and few succeeding joints chocolate-brown. Thorax chocolate-brown, sometimes irrorated with white behind. Patagia: the basal half chocolate-brown, the apical half white. Anterior wings glossy silvery white, broadly and variedly marked with chocolate-brown, with the costa reddish on the edge. The markings generally present are: a patch at the base, mixed with white, a very oblique, variously-formed central fascia, extending from before the middle of the costa and dilating irregularly in its course to the anal angle, where, in dark specimens, it unites with a large cloud or patch, which occupies, more or less, the dorsal margin; very frequently the fascia is interrupted; the subapical costal patch is large and trigonate: these marks all chocolate, more or less speckled with white; the apical margin mottled with the same colour and white; the disk of the wing, especially towards the apex, is freckled with black spots of various sizes. Apical scales reddish, mottled with white and pale bases. Cilia white, merging into grey at the anal angle; reddish at the apex. Posterior wings shining grey, slightly fuscous at the apex, and sometimes with the black freckles on the under side showing through. Marginal scales slightly fuscous, with paler bases. Cilia sometimes white, but usually grey. Abdomen dark fuscous; the apex subochreous. ♀ Exp. al. 6-8 lin.

A beautiful and very variable species, the variation consisting, however, of the greater or less preponderance of the silvery white ground-colour, or of the chocolate-coloured markings; some specimens, although very rare, are wholly white, others, more commonly, wholly brown; speckled instances occur between these two extremes in all gradations. The uniformly brown examples are the *Tortrix castaneana* of Haworth.

The imago affects heathy places, and is exceedingly abundant on the Moors in the north of England and south of Scotland; it is also taken, but sparingly, in the south of England, at the New Forest, near Ashdown Forest, West Wickham Wood, Dartford Heath, and Wimbledon Common. It occurs in September, October, and November; hibernating, and may be captured, up to April in the following spring.

Genus II. OXYGRAPHA, HÜBNER.

Palpi longer than the head, appressed, porrected horizontally, densely clothed with short scales. Basal joint curved, as long as the apical, which is cylindrical, acute at the apex, slightly drooping; middle joint three times the length of the apical, thickest beyond the middle, its clothing enveloping the apical joint. Maxillæ as long as the palpi. Thorax globose, trigonate behind, with a small crest. Anterior wings: with numerous tufts of elevated scales disposed over the surface; length more than twice the width. Costa *obtusely arched* at the base, *concave in the middle*, and *arcuated towards the apex*; roughly ciliated before and beyond the middle. Apex slightly produced; apical and dorsal margins slightly rounded. The discoidal cell is situated in the middle of the wing, and extends scarcely two-thirds its length, widest in the middle. The costal vein reaches the costa before the middle. Posterior wings obovate; apex acute; apical and dorsal margins slightly concave; *basal angle produced*. Abdomen long, slender, in the ♂ tufted at the apex.

The insects located in this genus are four in number, form a very natural group, and are of uncommon occurrence, appearing mostly in the autumn. The larvæ are almost entirely unknown; some of the species have been bred, but their preparatory states have not been recorded. As a whole, the perfect insects bear considerable resemblance to each other, but are very different in regard to size.

The four British species are thus arranged:—

- | | |
|--|-------------|
| A. Anterior wings green, with <i>markings and spots of various colours</i> , chiefly black | Species 1 |
| B. Anterior wings white, or very pale grey, with <i>black or cinereous markings</i> | Species 2-4 |

1. *literana*, Linn. Alis anticis viridibus scabris; characteribus atris notatis; posticis fusco-griseis. ♂ Exp. al. 10 lin.

Head dull, delicate pale green. Face paler. Eyes black. Palpi: above very pale green, sometimes almost white, but with a greenish tinge; same colour at the sides above; below fuscous, sometimes

blackish, and the base straw-colour; between and beneath straw-colour. Antennæ brown above, paler beneath; basal joint clothed with pale-green scales above, and straw-colour or dusky beneath. Thorax dull; pale green, smooth, crested behind; the crest green, sometimes yellow, at others with a jet-black spot on each side. Patagia same colour as the thorax. Anterior wings dull, pale green, with numerous elevated tufts and ridges, composed of black and green scales interspersed with jet-black markings; the latter are variable as to their position, but very frequently consist of seven or eight markings on the costa, those near the base being produced into streaks, the innermost sometimes continued across the wing till it meets a longitudinal streak, and forming with it the letter L. At the base, near the dorsal margin, is a short longitudinal streak. In the middle of the disk is another longitudinal streak, furcating upwards and outwards at its apical extremity; beyond this is a spot, sometimes very conspicuous; several minute spots are dispersed over the surface of the wing, and in some instances along the apical margin. Apical scales pale green, with whitish bases, cilia whitish, both becoming paler at the anal angle. Posterior wings very pale fuscous, with the extreme margin darker. Marginal scales fuscous, with paler bases. Cilia straw-colour. Abdomen pale fuscous, darker towards the apex. ♀ Exp. al. 10 lin.

This lovely species is extremely variable, but the ground-colour is mostly green, with black markings; sometimes the ground-colour is *dotted and clouded with bright ferruginous*, at others with *olive-green*. A most remarkable instance of this last description is in Mr. Edwin Shepherd's collection. The rarest form of this insect is the var. *irrorana*, in which the anterior wings are thickly speckled with minute black spots, on the usual green ground-colour.

The imago appears, somewhat commonly, at the New Forest, —more sparingly in Dorsetshire, Devonshire, and the west of England; it occurs also in Worcestershire, Darenth, Birch, and Coombe Woods. Bere Wood near Dover, Plumstead, Leatherhead Common near Guildford, and near Norwood, are likewise localities for the insect. It has also occurred in Scotland, but very rarely. It is to be taken from July to October, and will come to sugar. This species hibernates.

The pupa and larva are unknown: but from the circumstance of the imago being beaten out of Oaks and other trees covered with Lichen, the latter is probably a Lichen-feeder; but this we believe is, at present, only conjecture. The colour and rough appearance of the perfect insect has doubtless originated this supposition.

2. *Scotana*, Guen. MSS. Alis anticis albidis scabris; maculis tribus cinereis aut nigris medio costæ in triangulo dispositis; punctis nigris sparsis; margine dorsali *maris* puncto ferrugineo; posticis canis aut griseis nitidis; apice strigulis fuscis; ciliis albis. ♂ Exp. al. 10–10½ lin.

Head and face pale hoary grey. Eyes black, with a velvety appearance. Palpi longer than the head, hoary grey above and at the sides, white beneath. Antennæ pale grey. Thorax and patagia hoary grey, paler behind; the latter, at the apex, sometimes inclining to fuscous. Anterior wings dull, dirty white, mottled and freckled with grey. The costa is broadly alternated with patches of grey, especially before and beyond the middle; these patches, in conjunction with a conspicuous one in the centre of the disk, form a triangle; sometimes these markings approach to black, the central spot usually tinged with ferruginous. *A bright ferruginous spot is on the dorsal margin near the base, with a black one near it; the remainder of the wing freckled with grey or blackish atoms, especially along the apical margin.* The foregoing is the appearance of the wing *viewed from above, or from the base*; but *viewed towards the base*, several streaks of black become visible, which are hidden in the other positions by the ridges of elevated scales which are disposed over the surface. Apical scales pale, cream-coloured. Cilia white. Posterior wings very glossy, grey. Marginal scales grey, with cream-coloured bases. Cilia white. Abdomen and caudal tuft very glossy, yellowish white. ♀ Exp. al. 9–10 lin. Anterior wings, with the central and contiguous costal marks, more distinct; the freckling more scanty than in the ♂. The ferruginous spot on the dorsal margin wholly wanting.

Constant in the ground-colour of the anterior wings; the markings vary in intensity.

The imago appears in September and October in Perthshire, where it was first captured by the late Richard Weaver, and afterwards by Mr. Foxcroft and others. It is beaten out of the White Birch (*Betula alba*). Hybernates. Preparatory states unknown.

3. *scabrana*, Fabr. Alis anticis albidis aut canis, scabris; ad costam maculis tribus confluentibus in triangulo dispositis; punctisque nigris sparsis; margine dorsali *maris* puncto ferrugineo; posticis canis aut griseis, nitidis; apice strigulis fuscis; ciliis albis. ♂ Exp. al. 8–8½ lin.

Head grey, with a few umber scales behind the antennæ. Face grey, mixed with umber above, paler below. Eyes black. Palpi longer than the head; above pale grey, at the sides dusky, beneath white. Antennæ above grey, beneath paler. Thorax and patagia grey. Anterior wings dull, dirty white, with brick-red patches on

the costa, arranged in a triangular form, and streaked with black; the disk faintly clouded with ferruginous, and thickly freckled with black or dusky atoms, particularly at the base of the costa, and along the apical margin. Looking *along the wings* towards the base, some fine black streaks are visible, which are *hidden, when viewed from above*, by the tufts and ridges upon the wing; the most conspicuous of these latter runs obliquely to the middle of the dorsal margin. Apical scales grey, speckled with umber and brick-red at the base. Cilia grey, speckled with umber. Posterior wings very glossy, grey at the base, merging into fuscous at the margins, the speckling of the under surface showing through. Marginal scales fuscous, with straw-coloured bases. Cilia whitish. Abdomen glossy, pale grey, the apex drab. ♀ Exp. al. $8\frac{1}{2}$ –9 lin.

Much resembles *O. scotana*, but is smaller; the ground-colour slightly darker, and the three spots in the middle, larger and brown or brick-red. It varies *inter se* in the intensity of the markings, and slightly as to size.

According to the late J. F. Stephens, the imago appears in July and August; but Mr. E. Parfitt, who has been in the habit of taking the insect for several years past, besides breeding it, fixes the time as October and November. Round Paris, according to M. Guenée, it is a very common species among Elms, with us it occurs but sparingly, and is local. It has not been taken near London for some years. Birch, Darenth and Coombe Woods, near Exeter, London, and Worcester, are noted as localities.

This species remains in the pupa state about one month.

The larva is found on the Elm, is full-fed about the beginning of September, and is 6 lines in length. The Rev. E. Horton says (in the 'Entomologist's Weekly Intelligencer,' vol. v. p. 14), that he bred this species from larvæ which he could not distinguish from those which produced *O. Boscana*.

4. *Boscana*, Fabr. Alis anticis scabris, albis; maculis tribus brunneis ad costam in triangulo dispositis, atomisque fuscis sparsis; posticis griseis. ♂ Exp. al. $7\frac{1}{2}$ lin.

Head and face white. Eyes black. Palpi longer than the head; above and between white; grey at the sides and beneath. Antennæ grey. Thorax whitish in front, grey on the vertex and behind. Patagia grey. Anterior wings white, with two oblong umber patches on the costa, one *before*, and the other *beyond*, the middle, and a third one *between* them, towards the centre of the disk; all more or less speckled with intense umber or black. At the base of the costa, centre of the disk, towards the anal angle, and in the apical region, are patches of umber freckles. A few tufts, and ridges of elevated scales are

dispersed over the surface. Apical scales and cilia white. Posterior wings glossy, grey at the base, becoming fuscous towards the margins. Cilia yellowish. Abdomen grey, the apex drab.

In general appearance this species is like *O. scabrana*, but is distinguishable by its smaller size, whiter anterior wings, and the colour of the spots (these latter vary in intensity); the tufts and ridges are less numerous, and not so developed. Sometimes the anterior wings are suffused with an ochreous tinge, as figured in Wood's 'Ind. Ent.' Pl. 36, f. 1096, which we consider as the *Tortrix Cerusana* of Hub., Haw., &c.

The imago appears among Elms in July, is very rare and local in England. It occurs at Darenth, near Dover, New Forest, Bridlington, Exeter, and Worcester. Like the preceding, it is common round Paris.

The larva feeds on the Elm, uniting the leaves, and is full-fed towards the middle of June.

Genus III. PERONEA, CURTIS.

Palpi twice as long as the head, remote, porrected upwards, densely clothed with short scales, which envelope the apical joint; basal joint pyriform, stoutest at the apex, as long as the apical, which is simple and cylindrical, its apex acute; middle joint thrice the length of the apical, *arching upwards*, and thickest in the middle. Maxillæ as long as the palpi. Thorax globose, trigonate behind. Anterior wings: length exceeding twice the width, with *tufts of elevated scales disposed over their surface*. Costa arched, obtusely at the base and regularly at the apex, slightly concave in the middle. Apex produced; apical margin concave; dorsal margin nearly straight. The discoidal cell is situated in the middle of the wing, and extends scarcely two-thirds its length. The costal vein attains the costa before the middle. Posterior wings obovate; apex acute; apical and dorsal margins slightly concave; basal angle produced. Abdomen stout in the ♀, tufted at the apex in the ♂.

This is a beautiful and most variable genus, in some of the species (*cristana*, *Hastiana*) excessively so; none of them of *very* common appearance, occurring mostly in the late summer and autumnal months, sometimes hibernating. The ♀ frequently smaller than the ♂.

The larvæ of many of the species are unknown, but those which are, are tolerably active, of greenish-yellow colour, very diaphanous, and the *outer skin overlapping considerably at the junctures of the segments when the body is contracted*.

From the very wide range of variation to which several of the species of this genus are subject, the arrangement of their sequence in a tabulated form is by no means easy. The following appears to us as the best:—

- A. Anterior wings with a *triangular mark* at the *middle of the costa* Species 1-5
 B. Anterior wings with the markings disposed *in spots and fasciæ* Species 6-8
 C. Anterior wings brown, with a *darker diagonal streak* from the base to the apex Species 9
 D. Anterior wings with a *white vitta* along the dorsal margin, and a *large central tuft* of elevated scales . Species 10
 E. Anterior wings with the *basal half pale* and the *apical half dark*.
 a. With the base *primrose* colour Species 11
 b. With the base *whitish or straw* colour Species 12

1. **Schalleriana**, Linn. Alis anticis griseis; macula trigona medio costæ ferruginea; punctis elevatis atomisque nigris apicem versus sparsis; striga abbreviata ad marginem dorsalem ferruginea; posticis fusco griseis. ♂ Exp. al. 7-8 lin.

Head and face dull fuscous. Eyes black. Palpi above and at the sides fuscous, pale drab between and beneath. Antennæ fuscous, with the basal joint pale beneath. Thorax smooth fuscous, slightly shining. Patagia same colour as the thorax. Anterior wings shining grey, with an ochreous tinge; on the costal margin is a large triangular truncate patch, of a deep brick-red colour, enclosing a paler space on the costa, and edged with white within; at the truncate apex of this patch is a small pale ferruginous cloud, bearing one, sometimes two, minute brown tufts of elevated scales. On the dorsal margin near the base is a short pale ferruginous streak, at the apex of which is another tuft of brown and black scales, with two smaller ones adjacent. The apical portion of the wing marked with irregular lines of dark dots, those on the margin most distinct; the costal and dorsal margins speckled with whitish and grey. Apical scales slightly ochreous, with grey bases. Cilia concolorous, or rather paler, merging into iron-grey beyond the anal angle. Posterior wings clothed with pale fuscous scales, darkest at the apex, on a pearly ground. Marginal scales fuscous, with luteous bases. Cilia shining, with a very pale fuscous tinge. Abdomen pale fuscous, with a shining caudal tuft at the apex. ♀ Exp. al. 8 lin.

This beautiful species is tolerably constant in its colours, but varies considerably as to size; in general appearance it much resembles *P. comparana*, and is often confounded with it; but it is easily distinguishable therefrom by the *anterior white edging*

of the costal patch and the brick-red colour of the patch itself, which in the latter species is almost always umbreous; the ground-colour, too, is considerably less ochreous.

There is one well-defined variety, the *Tortrix latifasciana* of Haw., L.B. 414, No. 65, which has a rhomboid brick-red patch at the base, followed by an abbreviated streak of the same colour, originating on the dorsal margin; the costal patch is much amplified, and extends to, or nearly to, the opposite margin.

The imago appears from August to September, among Sallows and Willows. It is taken at Birch, Coombe, Darenth, Wickham, and Meonstoke Woods, the vicinity of London, Cheshire, in the north of England, in Scotland, and in Ireland.

The larva feeds on the Sallow and Willow, and Mr. J. H. Harding quotes the Meadow Sweet (*Spiræa ulmaria*) as the food-plant. It is to be found in plenty on the Willows in Plaistow Marshes, near London.

2. *comparana*, Hub. Alis anticis ochraceis; macula trigona medio costæ saturate fusca; striga abbreviata obliqua ad marginem dorsalem punctulisque elevatis fuscis; posticis griseis. ♂ Exp. al. 7-9 lin.

Head and face fuscous, sometimes dull ferruginous. Eyes black. Palpi above and at the sides same colour as the head, whitish beneath. Antennæ fuscous. Thorax and patagia fuscous, sometimes ferruginous. Anterior wings reddish ochre, with a large umbreous triangular patch on the costa, with a leaden lustre, enclosing a small dull ochreous space at the margin, and sometimes a still smaller one nearer the apex. Near the base on the dorsal margin is a short, dusky, oblique streak, with a small dark-brown tuft of elevated scales at its apex, followed by two or three others of the ground-colour of the wing; below the apex of the triangular costal patch are several tufts, and one near the middle of the dorsal margin; towards the apex are a few others; the apex itself slightly reticulate in appearance. Apical scales and cilia concolorous, but slightly paler, especially at the anal angle. Posterior wings pale fuscous grey. Marginal scales pale fuscous, with luteous bases. Cilia pale fuscous grey. Abdomen pale fuscous; the caudal tuft dull straw-colour. ♀ Exp. al. 8-9 lin. Anterior wings marked as in the ♂, but of a warmer tint.

In size and general appearance somewhat resembling *P. Schalleriana*, but is much more ochreous in the ground-colour of the anterior wings, and the costal patch is almost always umbreous. It is not subject to much variation.

The imago is frequently taken in company with *P. Schal-*

leriana, but more generally, distributed over the country; is common in the south of Scotland, and also in the vicinity of Dublin.

The larva feeds on the Sallow and Willow.

Note.—A considerable number of this species have been bred by Messrs. C. S. Gregson and R. S. Edelston, for which the name of *P. potentillana* was proposed by Mr. N. Cooke. This supposed species is very variable: some examples have much the appearance of *P. Schalleriana*, but it more generally resembles *P. comparana*; it also comes near to some of the paler forms of *P. tristana*. The ground-colour of the anterior wings ranges from the tint of grey, as in *P. Schalleriana*, to the rufous colour of *P. comparana*; the costal mark from ferruginous brown to dark umbreous, but it never has the bright-red colour of the same mark in *P. Schalleriana*. In some specimens the costal mark is, as it were, made up of the commencement of a central fascia, confluent with the subapical spot, which are sometimes faintly produced, in the form of a fascia, to the opposite margin; in this last particular departing from what we usually see either in *P. Schalleriana* or *comparana*. In size it is somewhat smaller than either. The larva feeds on the Strawberry, preferring the white-fruited kinds: *vide* the 'Entomologist's Weekly Intelligencer,' vol. iv. p. 202.

3. *tristana*, Hub. Alis anticis ochraceis; macula trigona lata medio costæ saturate fusca; posticis griseis apice saturatoribus. ♂ Exp. al. 7-9 lin.

Head and face dull umber. Eyes black, slightly shining. Palpi above umber, at the sides slightly paler, drab beneath. Antennæ dark brown, the basal joint beneath pale. Thorax and patagia umber, the latter slightly paler. Anterior wings glossy, sordid ochreous, with a broad triangulate umbreous patch on the costa; the apical and dorsal margins speckled with umber; a few minute concolorous tufts of elevated scales are placed towards the base and along the inner edge of the costal patch. Apical scales rather darker, and the cilia paler, than the wing, both becoming paler at the anal angle. Posterior wings shining; grey at the base, with a slight fuscous tinge; fuscous at the apex, with the margin darkest. Marginal scales fuscous, with paler bases. Cilia pale grey, with a fuscous tinge. Abdomen dark fuscous; the caudal tuft slightly ochreous. ♀ Exp. al. 7-9 lin.

A very variable species, both in size and colour; in some specimens the ground-colour of the anterior wings is very pale drab; in others ochreous, going through the different shades to

uniform chocolate-brown. The costal markings are usually of this latter colour, whatever the variety.

The imago appears from September to November, and in some seasons very plentifully, in others but sparingly. It occurs at Darenth, Greenhithe, and Birch Woods; at Pashley in Sussex, at Wimbledon Common, Mickleham, Sanderstead Downs and vicinity; in Argyleshire in Scotland, and in Ireland in the neighbourhood of Belfast.

The pupa measures 4 lines in length; is of a hazel or ferruginous colour, the wing-cases glossy, the remainder of the surface dull.

The larva is pale olive-green, inclining to yellow, with a darker dorsal vessel; is full-fed in August or September, according to seasons; 6 to 7 lines in length. Head immaculate, pale, luteous, and diaphanous; labrum brown; shield greenish, shining, and very transparent, immaculate; anal segment opaque-green, with a few black punctures on the disk. Feeds on *Viburnum lantana*; in its young state it puckers the leaves downwards, by drawing two of the side-ribs together with a thick spinning of drab-coloured silk. In its full-grown state it folds the leaf backwards, first longitudinally on one side, or parallel with the midrib; and afterwards turning the upper part of the leaf down at right angles to the direction of the first fold; the leaves thus present a very crumpled appearance, by which the larvæ may easily be detected. It eats away the under portion of the leaf.

4. *rufana*, Schiff. Alis anticis pallide ochraceis; atomis nigris sparsis; costa alba vel cretacea; posticis nitidis albicantibus. ♂ Exp. al. 9-10 lin.

Head and face pale drab. Eyes black. Palpi longer than the head, dark drab, or pale ferruginous, above and at the sides, dusky at the apex, paler beneath. Antennæ drab, basal joint clothed with pale ferruginous scales. Thorax and patagia drab, the former paler behind. Anterior wings glossy, pale ochreous, or clay-colour, with the costa broadly dirty white to beyond the middle, a whitish cloud towards the base, and the disk freckled with numerous minute black spots. Apical scales pale ferruginous. Cilia pale ferruginous, with the tips and bases pale drab. Posterior wings glossy, at the base pale grey, merging into an ochreous tint at the margins; on the under surface speckled at the apex with iron-grey. Marginal scales and cilia (the latter long) pale drab. Abdomen glossy grey, the caudal tuft inclining to pale ochreous. ♀ Exp. al. $8\frac{1}{2}$ - $9\frac{1}{2}$ lin.

Exceedingly variable; the ground-colour of the anterior wings

ranging from pale ochreous to dark slaty-grey. The instance above described is the var. *P. albicostana* of Stephens.

The var. *P. bistriana* has a slightly-waved bay or chestnut-coloured streak running from the base to the apex, and a second one from the base nearer the dorsal margin, where it is broadest, vanishing to near the apex.

The var. *P. similana* is like *P. albicostana*, but has an acute triangulate mark upon the costa, beyond the middle, and extending to near the apex, with a suffused mark near the base on the dorsal margin, both iron-grey or pale liver-colour; these markings are more or less distinct in different specimens.

The dark slaty-grey specimens have very frequently an oblique crimson streak running from the base to the apex.

The imago appears from July to November. It was till within these few years a scarce species; but latterly it has turned up in plenty at Wimbledon Common, where it is beaten out of Fern, but the larva is believed to feed on *Salix fusca* (the Dwarf Sallow). It has occurred also at Birch Wood, near Dover, and at the New Forest.

5. *Lipsiana*, Schiff. Alis anticis fuscis; squamis griseis irroratis, ad costam præcipue; ciliis griseis; posticis nitidis fusco-griseis; subtus ad apicem punctis fuscis. ♂ Exp. al. 9 lin.

Head and face chocolate-colour, the tips of the scales whitish. Eyes black. Palpi longer than the head, pale chocolate at the apex and at the sides, grey beneath and between. Antennæ glossy fuscous, with a grey bloom. Thorax and patagia dull chocolate, the tips of the scales whitish; the crest of the former dull red. Anterior wings glossy, brick-red, thickly irrorated with dark-grey scales with paler tips, especially towards the costa. Apical scales dark grey, with paler tips. Cilia dusky grey, with whitish tips; the bases also speckled with whitish. Posterior wings glossy, grey at the base, with a fuscous tinge towards the margins. Marginal scales drab. Cilia long, paler. Abdomen grey, the apex drab. ♀ Exp. al. 8-9½ lin.

A Scotch species, if really distinct from the preceding, which is not satisfactorily determined. In its normal form it is exceedingly like some of the slaty-grey varieties of *P. rufana*, so much so as not to be distinguished from them. The food-plant of *rufana* is supposed to be *Salix fusca* (the Dwarf Sallow); but that of the reputed *Lipsiana* is *Myrica Gale* (the Sweet Gale), or *Vaccinium Vitis idæa* (Red Whortleberry).

The imago appears in August and September, and occurs at Rannoch in Perthshire, N. B.

6. *favillaceana*, Hub. Alis anticis favillaceis; strigulis maculaque brunneis; punctis elevatis sparsis; posticis fusco-griseis. ♂ Exp. al. 9-10 lin.

Head ashy-grey. Face ashy-grey. Eyes intense purplish brown, with a velvety appearance. Palpi ashy-grey above and at the sides, white beneath. Antennæ fuscous above and beneath; basal joint clothed beneath with whitish scales. Thorax ashy-grey, smooth, slightly shining. Patagia same colour as the thorax. Anterior wings ashy-grey, the costa at the base broadly alternated with wide (sometimes narrow) streaks of reddish brown, more or less produced along the disk; one-third from the base commences a broad reddish-brown fascia, angulated on both sides, and extending to the anal angle; this fascia is darkest at its origin, and on its edges; the subapical costal patch is wide and triangular, its edges likewise darkest; sometimes the edges of this patch are produced into streaks, which converge at the apical margin above the anal angle. Along the inner edge of the central fascia are disposed, at regular intervals, several minute tufts of ashy- and chocolate-coloured scales, a solitary one in the median fold near the base, and several others towards the apex. Apical margin red-brown. Apical scales red-brown, with ashy bases. Cilia shining, pale ashy-grey, slightly paler at the anal angle. Posterior wings clothed with coarse pale fuscous scales on a pearly ground, the margin darkest. Marginal scales fuscous, with luteous bases. Cilia shining, with a very pale fuscous tinge. Abdomen fuscous, the caudal tuft drab, or slightly ferruginous. ♀ Exp. al. 10-11 lin. Anterior wings more broadly streaked at the base of the costa than the ♂. Abdomen with the apex luteous.

Varies in the tint of the ground-colour, in the colour and extent of the markings, and also much in size.

The varieties named in the Museum Catalogue are *Tortrix reticulana* and *tristana* of Haw., and *Teras lividana* of Treitschke.

Var. *reticulana* differs from the type in the presence of a faint reticulation of the anterior wings.

Var. *tristana* is usually smaller, but not otherwise much departing from the type.

Var. *lividana* are nearly unicolorous instances from the great absence of the reddish-brown markings.

The imago appears from July to October; is found among Beeches, and seems to be generally distributed. It occurs at the New Forest, in the vicinity of London, at West Wickham Wood, Sanderstead, and Mickleham Downs; in the north of England, in Scotland, and in the vicinity of Dublin.

According to Mr. R. Shield, the larva is to be found in June and July on the underside of beech-leaves, spun up in a slight web.

7. *maccana*, Treits. Alis anticis nitidis, cinereis; maculis irregularibus brunneis marmoratis; posticis, nitidis fusco-griseis. ♂ Exp. al. 9-10 lin.

Head and face fuscous, inclining to griseous, sometimes ferruginous. Eyes black. Palpi griseous above and at the sides, at the apex castaneous. Antennæ fuscous, pubescent beneath. Thorax mottled with dark grey and umber. Patagia castaneous. Anterior wings glossy, dark grey, with umbreous or rich castaneous brown markings. Towards the base is a broad brown patch, which does not attain the dorsal margin; at nearly one-third from the base is a very oblique fascia, distinctly bordered anteriorly, and much undulated, diminishing in intensity as it reaches the opposite margin, near the anal angle; posteriorly this fascia is undefined, and paler. Towards the apex are two or three similar-coloured curved streaks, forming together a somewhat trigonate patch. Along the apical margin are several short intense brown streaks, and the pale portions of the wing are more or less speckled with brown. The costa is speckled throughout, as is also the dorsal margin; the latter much paler. Marginal scales mottled with castaneous and pale grey, darkest at the tips. Cilia tolerably uniform castaneous, somewhat paler, with grey bases. Posterior wings glossy, grey with a fuscous tinge, the dark markings of the underside showing through, giving the upper surface a speckled appearance. Marginal scales and cilia of similar colour, Abdomen glossy, fuscous-grey, the caudal tuft pale, dull ferruginous. ♀ Exp. al. 9-9½ lin.

A variable species; in general appearance very like *P. Hastiana* in its typical form, but somewhat more glossy; it is, however, *less obtuse on the costa at the base*. It has also a very near resemblance to the full and distinctly-coloured specimens of *P. favillaceana*.

The imago appears in the autumn, and has been captured by Mr. Bentley at Epping Forest, and by the late Richard Weaver in Scotland; it occurs also near Manchester, but rarely.

The larva feeds on the Whortleberry (*Vaccinium Vitis Idæa*), or the Bilberry (*V. Myrtillus*).

8. *Hastiana*, Linn. Alis anticis saturate fuscis marmoratis; basilitura undulata, altera ad angulum analem niveis albisve griseis; posticis nitidis fusco-griseis dilutis, subtus punctis fuscis. ♂ Exp. al. 9-10 lin.

Head and face deep purple-brown; the tips of the scales whitish. Eyes black. Palpi longer than the head; above and at the sides deep purple-brown; the tips of the scales whitish; drab beneath. Antennæ deep purple-brown. Thorax deep purple-brown, a few scales with whitish tips on the vertex; grey at the sides behind;

the crest rich purple-brown. Patagia deep purple-brown, edged with grey or drab at the apex. Anterior wings glossy, rich purple-brown, with whitish or very delicate pale green markings; one broad and oblique near the base, not always attaining the costa; its anterior edge undulate, the posterior nearly straight. Towards the anal angle is another mark much curved, and of nearly equal width, in contour somewhat reniform; a few pale spots on the costa and in the apical angle, also at the base, towards the dorsal margin. The pale markings more or less freckled with the ground-colour of the wing; sometimes the *Vitta*, on the dorsal margin, as in some of the varieties of *P. cristana*, is visible. A small tuft of elevated scales, of the ground-colour of the wing, is towards the base, on the anterior margin of the oblique pale mark, and another of black and ochreous colour on the opposite edge of the same mark. Apical scales rich purple-brown, with paler bases, and sometimes with the tips whitish. Cilia purplish brown. Posterior wings very glossy, pale grey at the base, merging into fuscous at the margins; of a speckled appearance, from the dusky maculations of the under-surface showing through. Abdomen grey, the caudal tuft drab. ♀ Exp. al. $8\frac{1}{2}$ – $9\frac{1}{2}$ lin.

Like *P. cristana* is exceedingly variable, not only in the colours, but in the character of the markings; it is distinguished from that species by the *absence of the large tuft of elevated scales in the centre of the anterior wings*. In its typical form it resembles *P. maccana*, but is *less glossy*, and has *the costa at the base more obtuse*.

The named varieties are exceedingly numerous, but our space will not admit of a separate notice of them; we, however, consider, upon the whole, that the variation is not so distinct or decided as in *P. cristana*, where the named varieties are still more numerous.

There appear to be two broods of the imago in the year; the first emerging in May, of which the insects are much smaller than the autumnal brood, which emerges in September and October. It is a somewhat common species, occurring among Sallows in the vicinity of London; at Birch, Coombe, Dulwich, Darenth, and Greenhithe Woods; at Lewisham and Hampstead, Epping and New Forests, Wimbledon Common; in Worcestershire; at Ripley in Surrey; and in Perthshire in Scotland.

The larvæ feed on the Sallow, spinning together the terminal leaves, and in some seasons are very numerous. It is of a pale-green colour, with a pale luteous head, and slight indications of narrow chestnut-coloured markings at the base.

9. *umbrana*, Hub. Alis anticis brunneis aut ferrugineis; striga ramosa a basi ad apicem brunnea obscura, punctis elevatis sparsis; posticis nitidis fusco-griseis. ♂ Exp. al. 10 lin.

Head and face umber-brown. Eyes black. Palpi: above, at the sides, and beneath, umber-brown, paler between. Antennæ umber-brown, paler beneath. Thorax and patagia umber-brown, smooth. Anterior wings of a satiny appearance, pale umber, with an intense umber-coloured streak running from the middle of the base to the apex; broadest shortly after its commencement, somewhat interrupted in the middle, and slightly rayed towards its termination. Along the course of this streak are three tufts of pale-umber elevated scales, one below it, near the base, which is also the largest; the second in the middle above; and the third towards the apex, below. There are also two other similar-coloured tufts near the dorsal margin, towards the anal angle, and several minute ones may be traced at various parts of the wing. The apical margin well defined, and slightly darker than the ground-colour. Apical scales pale umber, tipped with greyish. Cilia slightly darker, and merging into iron-grey at the anal angle. Posterior wings very pale fuscous, shining, almost with a pearly lustre. Marginal scales paler and shining. Cilia slightly darker. Abdomen fuscous, darkest towards the apex; the caudal tuft shining, and rather ferruginous in colour. ♀ Exp. al. 9 lin. Anterior wings coloured, marked and tufted like the ♂; the central streak, however, is less distinct, and more rayed in its course.

Like its congeners, it varies much; but it is always of sombre hue, never departing widely from the type. In general appearance it much resembles some of the darkly-coloured, obliquely-striated varieties of *P. Hastiana*.

The imago appears from August to October, but is far from common; it occurs chiefly among Blackthorn, on which the larva most probably feeds. Coombe Wood, the New and Whitlebury Forests, also Sanderstead and Mickleham Downs, are recorded as localities. It has also occurred in Ireland.

10. *cristana*, Schiff. Alis anticis saturate fuscis vel hepaticis; medio fasciculo squamarum elevatarum; vitta lata ad marginem dorsalem, punctisque apicem versus, elevatis niveis; capite palpis thoraceque niveis; posticis fusco-griseis. ♂ Exp. al. 9½ lin.

Head snow-white, slightly greyish in front. Face white with a fuscous irroration. Eyes brown. Palpi white with a fuscous irroration above, rich ferruginous at the sides and beneath, with the base yellow, between dirty white. Antennæ dark brown. Thorax and patagia snow-white, the bases of the latter chocolate-brown. Anterior wings chocolate-brown, with a snow-white vitta on the dorsal margin; at the centre of the wing is a large snow-white tuft of ele-

vated scales, two small ones in a line with it at the apex, and three others placed obliquely at the anal angle; the *vitta* is spear-shaped, with two minute white tufts on its interior edge, one near the base, the other beyond the middle, and with a few chocolate-coloured scales towards its apex; besides the tufts enumerated above, there are others, very minute, disposed here and there upon the surface. Apical scales chocolate-brown at the apex, with pale bases, becoming paler towards the anal angle. Cilia paler, merging into grey at the anal angle, and into white beyond it. Posterior wings shining, pale fuscous grey, clothed with coarse scales, the extreme margin narrowly fuscous. Marginal scales fuscous grey, with paler bases. Cilia pale grey. Legs: anterior and intermediate pairs chocolate-brown above, dull leaden straw-colour beneath; the tarsi alternated with pale brown; posterior pair pale straw-colour, with darker marks on the tarsi. Abdomen fuscous, the caudal tuft dull straw-colour. ♀ Exp. al. $9\frac{1}{2}$ lin. Anterior wings with a rich brown streak, extending from the central tuft to the apex; otherwise as in the ♂. Abdomen not tufted.

A most lovely and remarkably variable species; the varieties assuming such strange and opposite appearance, that it really requires an intimate acquaintance with the imago to be satisfied that they are not distinct; indeed there are many practised entomologists who consider the varieties as good species; but it is worthy of remark that the varieties *inter se* are very defined and constant.

The imago seems chiefly confined to the south of England, and appears from August to November, and occasionally even to January and February. It occurs at Birch, Darenth, Greenhithe, and Coombe Woods; New, Whittlebury, Epping, and Hainault Forests; Ripley, Fetcham Downs, Sanderstead Downs, and Leatherhead Common; also in Worcestershire. The New Forest appears to be its metropolis, and the insect affects those trees (Whitethorn and Blackthorn) which are overgrown with Lichen.

The larva is unknown, although the insect has in one or two instances been bred, promiscuously, from Whitethorn.

11. *permutana*, Dup. Alis anticis basi pallide ochraceis, pone medium badiis; macula ad marginem dorsalem, alteraque ad apicem, brunneis; posticis fusco-canis. ♂ Exp. al. 8 lin.

Head and face chocolate brown. Eyes back, slightly shining. Palpi above and at the sides chocolate-brown, paler between and at the base beneath. Antennæ dark brown, paler beneath. Thorax varying from ochreous to straw-colour, darkest in front, the crest behind, brown at the apex; patagia ochreous at the base, the apices varying from ochreous to straw-colour. Anterior wings rich straw-colour,

clouded with ochreous at the base, the apical half variegated with pale pinkish brown and deep ferruginous. On the dorsal margin at the base is a broad cloud, composed of ochreous brown and iron-grey streaks, surmounted by a rich brown tuft of elevated scales; the costa streaked with brown or grey; the brown portion of the wing is darkest inwardly and at the apex, especially the latter, the space between being usually free from markings, except a minute spot or two at the anal angle; the apical cloud encloses a paler mark at the margin; a row of brown tufts is situated on the oblique inner edge of the dark portion of the wing. Apical scales rich ochreous, with brown tips. Cilia pale brown, mottled with iron-grey, wholly iron-grey at the anal angle. Posterior wings shining straw-colour. Marginal scales pale fuscous, with straw-coloured bases. Cilia pale straw-colour. Abdomen fuscous, the caudal tuft straw-colour. ♀ Exp. al. 7 lin.; marked and coloured like the ♂.

This species is exceedingly like the *Borana* var. of *P. variegana*, but larger (especially the ♂) and richer in colour. Although like *P. variegana*, it is not prone to vary; but varieties nevertheless do *sometimes* occur.

Originally recorded by Mr. N. Cooke of Warrington (Zoologist, p. 2271), who captured it on the coast at New Brighton in Cheshire, among *Rosa spinosissima*. It has since turned up there in plenty, and has likewise been captured among the same species of Rose at Barnes Common, in Surrey; taken also in North Wales: these are all the localities that we are aware of, but no doubt it will turn up wherever the *Rosa spinosissima* grows. "A strange peculiarity in the habit of this species is, that before 1 P.M. they secrete themselves in the bushes, and none are to be found; at 1 P.M. they emerge from their hiding places and sit on the leaves, and in this manner I have taken great numbers; varieties occur but rarely."—(R. S. Edleston, *in lit.*).

The time of its appearance is in August and September.

12. *variegana*, Schiff. Alis anticis basi albis; pone medium ferrugineis vel fuscis; macula ad marginem dorsalem, altera ad apicem saturatoribus; ante medium squamis elevatis; posticis griseis. ♂ Exp. al. 7-8 lin.

Head and face dull fuscous, the latter paler below. Eyes black, slightly shining. Palpi dull fuscous above and at the sides, paler beneath, sometimes the sides at the apex are dark ferruginous. Antennæ dark fuscous above and beneath. Thorax: in front iron-grey, with a pale transverse streak, the vertex and crest white; patagia fuscous or grey at the base, the apices white. Anterior wings white, with the apical half more or less ferruginous; at the base the costa

is maculated with fuscous, with a paler ochreous cloud below ; near the base, towards the dorsal margin, is a conspicuous roundish tuft, composed of black, iron-grey, and rich ferruginous scales (variable in different specimens) ; below it the margin is broadly marked and variegated with the same colours. Before the middle of the costa commences the dark portion of the wing, bordered inwardly with an undulating irregular edge ; this dark or ferruginous portion is sometimes uniform in colour, but most frequently with a paler fascia from the costa to the anal angle ; and in general there are near the apex one or two dark brown or blackish spots. Apical scales dark grey, with the bases straw-colour and the tips whitish. Cilia pale ferruginous merging into grey, with white bases at the anal angle. Posterior wings very pale grey, darkest at the apex, where it inclines to fuscous. Marginal scales pale fuscous, with straw-coloured bases. Cilia shining, very pale grey, whitish towards the anal angle. Abdomen fuscous, darkest towards the apex, the caudal tuft drab. ♂ Exp. al. 7-8 lin. Anterior wings, apparently with the basal half, more suffused or clouded with grey.

A very variable species, as its name implies ; the ground-colour of the anterior wings ranging from nearly white to nearly black ; sometimes they are one-half of their surface white, the other black.

The nearly white variety is the *P. albana* of Westwood, as figured in Westwood and Humphreys' 'British Moths and their Transformations,' vol. ii. pl. 95. fig. 17.

The black or nearly black one is the *P. cirrana* of Curtis.

Var. *P. aspersana* has the basal half of the wing cream-colour or pale ochreous, and the apical umbreous.

Var. *P. Borana* differs from the type in having the ground-colour of the anterior wings pale ochreous instead of white ; in this form it resembles *P. permutana*, but is *not so richly coloured*.

The imago appears in July and August, and is very common in hedges, woods, and gardens throughout the country ; it occurs also in Scotland and in the vicinity of Dublin.

The larva feeds on the Rose, Bramble, and Whitethorn, and is full-grown in June.

Genus IV. PARAMESIA, STEPHENS.

Palpi longer than the head, stout, porrected horizontally, densely clothed with short scales, appressed. Basal joint stout, drooping, pyriform, truncate ; apical very slender, cylindrical, as long as the basal ; middle ascending, very stout beyond the centre, curved, four times as long as the apical. Maxillæ slender, scarcely so long as the

palpi. Thorax globose. Anterior wings with a few minute tufts of elevated scales; length exceeding twice the width. Costa obtusely arched at the base, slightly concave in the middle; apex produced; apical margin concave, dorsal margin slightly rounded. The discoidal cell is situated in the middle of the wing, and extends scarcely two-thirds its length. The costal vein reaches the margin before the middle. Posterior wings elongate; apex acute, produced. Apical margin concave; dorsal margin entire; basal angle slightly produced. Abdomen tufted in both sexes; slender in the ♂, stouter in the ♀.

Allied to *Peronea*, but distinguished from it by the greater evenness of the colouring of the anterior wings, and the extent of variation is limited; never such as to give the notion, by departure from the type, of specific difference, which frequently occurs in *Peronea* proper. The chief structural variations are, as compared with that genus, the middle joint of the palpi is longer, and the apical margin of the anterior wings more rounded.

The following table shows the arrangement of the British species:—

- A. Anterior wings pale or ferruginous, with a *darker* triangular mark in the middle of the costa . . . Species 1-2
- B. Anterior wings *without the triangular mark* in the middle of the costa Species 3

1. *aspersana*, Hub. Alis anticis ochraceis, brunneo reticulatis; macula lata trigona pone medium costæ, saturate ferruginea; posticis griseis, apice fuscescentibus. ♂ Exp. al. 6½-7 lin.

Head and face varying from deep ochreous to ferruginous, sometimes fuscous. Eyes black. Palpi above and at the sides deep ferruginous brown; drab at the base beneath. Antennæ deep fuscous; the basal, and a few succeeding joints deep ferruginous. Thorax and patagia ferruginous in front, ochreous behind. Anterior wings bright ochreous, with a ferruginous tinge, and deep ferruginous markings, and fainter reticulations. The costa at the base ferruginous; before the middle, and before the apex, are two large deep-coloured, undefined patches, both suffusing and uniting with a third, and usually darker one, in the middle of the wing. On the dorsal margin, near the base, is a small ferruginous patch, of a triangular shape, having at its apex a minute black tuft in the fold: in this fold, beyond the middle of the wing, near the dorsal margin, is a minute black spot; a tuft of elevated scales is situated at the apex of the trigonal costal mark; apical margin narrowly ferruginous. Apical scales ferruginous, with yellowish bases. Cilia paler, becoming greyish towards the anal angle. Posterior wings shining grey, slightly fuscous at the apex. Marginal scales grey, with luteous

bases. Cilia pale grey. Abdomen shining pale grey; the caudal tuft straw-colour. ♀ Exp. al. 5-6½ lin. Anterior wings marked and coloured like the ♂, but wanting the minute tuft in the fold towards the base of the dorsal margin.

This species is liable to considerable variation in the intensity of the markings, but the ground-colour is much more constant. In general appearance it resembles *Param. ferrugana*, but is much smaller, and the markings are usually darker.

The imago appears in July and August, and we have met with it in tolerable abundance where its food-plants grow. Its recorded localities are: the New Forest; in Devonshire; Reddlesdown; near Croydon; at Mickleham; New Brighton; in the vicinity of Manchester; and in Scotland, on the Pentland Hills.

The pupa is 4½ lines in length, and of a deep ferruginous colour.

The larva is of a yellowish colour, and is to be found in June, feeding on the *Spiræa filipendula* (Dropwort) and "*Poterium sanguisorba*" (Lesser Burnet).

2. *ferrugana*, Schiff. Alis anticis pallide ferrugineis; strigulis reticulatis maculisque confluentibus, in triangulo dispositis saturatoribus; posticis griseis apice saturatoribus. ♂ Exp. al. 8-9 lin.

Head and face pale ferruginous. Eyes black, slightly shining. Palpi ferruginous above and at the sides; drab beneath. Antennæ fuscous, with a few joints at the base above ferruginous; the basal joint clothed beneath with drab-coloured scales. Thorax and pata-gia pale ferruginous. Anterior wings pale ferruginous, freckled and reticulated with a darker shade, slightly varying in intensity in different specimens. In the middle of the costal margin are situated three ferruginous, undefined, suffusing spots, placed in a triangle, two on the margin, the third on the disk. In some specimens these marks are much darker than in others. They are mixed with dusky scales; a few black freckles towards the apex; the apical margin ferruginous. Apical scales ferruginous, sometimes mottled with darker scales, and with slightly paler bases. Cilia pale ferruginous. Posterior wings glossy, pale grey at the base, pale fuscous, and (in some specimens) mottled, at the apex. Marginal scales grey, with luteous bases. Cilia very pale grey. Abdomen fuscous grey; the caudal tuft straw-colour. ♀ Exp. al. 6-8 lin. Anterior wings marked like the ♂, but the colour warmer, and the freckling and reticulation more distinct.

A plentiful species, and is subject to considerable variations in the ground-colour of the anterior wings, which ranges from straw-colour to rich ferruginous, and the markings from deep

ferruginous to umber. Some specimens have the upper wings distinctly and thickly speckled with black spots.

In appearance it much resembles *Param. aspersana* and *Dic-tyopteryx contaminana*; from the former it may be distinguished by its *size and by its usually more even colour of the wings*; from the latter, by the *absence of any sharply-defined reticulated markings*.

The imago appears from July to October, and sometimes as late as November, and is a common insect among Birch. It occurs throughout the metropolitan district, at Coombe and Darenth Woods, Charlton, West Wickham, and Wimbledon Common; also at Powerscourt, county Wicklow, Ireland.

The pupa measures from 4–4½ lines in length; is sometimes of a ferruginous colour, at others chestnut-brown, darkest towards the head. This state continues about three weeks.

The larva is full-grown about the middle of September, and is 7 lines in length, of a pale-green colour, with a darker dorsal vessel. The head is jet-black, somewhat rugose and shining; the shield is jet-black, narrowly pale on its anterior margin, with a slender dorsal division; the spots same colour as the body, but elevated and shining. This larva appears to be variable: in some instances the head is rich brown, with the shield *broadly* pale in front, and not so dark coloured, and mottled behind; and sometimes the shield has *two crescent-shaped black marks* towards the posterior margin. It feeds on the Birch, and puckers the leaf by a slight web of white silk.

3. *Caledoniana*, Bentley MSS. Alis anticis brunneis; strigis maculisque saturatoribus; posticis fusco-griseis apice saturatoribus.
♂ Exp. al. 6½–7 lin.

Head and face rusty brown. Eyes black. Palpi above and at the sides dull dusky brown, paler between and beneath towards the base. Antennæ dull brown. Thorax and patagia same colour as the head. Anterior wings shining, dull reddish brown, with darker markings and reticulations towards the apex; in some specimens a broadish, undefined, obscure brown fascia may be traced, more visible when viewed obliquely; there are several minute tufts in the middle and towards the apex; towards the base and between the costal and dorsal margins is a dark brown tuft, somewhat larger than the rest. Apical scales brown, with paler bases. Cilia grey, becoming paler at the anal angle. Posterior wings pale grey at the base, fuscous at the apex. Marginal scales and cilia grey, the former with paler bases. Abdomen fuscous, with the caudal tuft dull straw-colour.

Distinguished from its congeners by its dark colour and

small size. It does not seem to vary in its general appearance and markings; it bears some resemblance to *Param. aspersana*, but is always *very much darker*, and the anal angle is less produced than in that species.

The imago is taken plentifully on mountain heaths in the north of England, also on boggy moors in the south of Scotland, and near Edinburgh. In the vicinity of Manchester it is captured among "*Vaccinium Myrtillus*, the males flying in the afternoon, the females at rest."—Mr. R. S. Edleston, *in lit.*

The larva feeds on *Alchemilla alpina* (The Alpine Ladies' Mantle).

Genus V. TERAS, TREITS.

Palpi twice as long as the head; porrected horizontally, remote and diverging; densely clothed with short scales; clothing of the middle joint not enveloping the apical. Basal joint curved, pyriform, stoutest at the apex; apical cylindrical, obovate, twice as long as the basal; middle joint four times as long as the apical, slender at the base, arching upwards; stoutest beyond the middle. Maxillæ as long as the palpi. Thorax globose, tufted behind. Anterior wings with minute elevated tufts of scales; length equals twice the width. The costa much arched, and deeply concave in the middle. Apex produced; dorsal margin straight. The discoidal cell is situated in the middle of the wing, slightly arched in shape, and proceeds rather more than three-fifths its length. The costal vein runs parallel with the costa at the base, and terminates in the costal incision; the subcostal nervures equidistant, *the first and second terminate in the incision, and the third beyond*; the submedian nervure is inserted before the middle of the submedian vein. Posterior wings ample, apex acute, apical margin concave; the basal angle produced. Abdomen long and slender in the ♂, stouter in the ♀; tufted at the apex in both sexes.

A peculiar genus, containing but one species, and that liable to considerable variation. It is allied to the *Peronea*, but abundantly distinct from them, and from all other known genera, British or European, by the *deeply-excavated costal margin* of the anterior wings.

1. *caudana*, Fabr. Alis anticis subcaudatis; fusco-cinereis, strigulis fuscis; margine dorsali flava vel sanguinea; posticis fusco-griseis; subtus cinereo-reticulatis. ♂ Exp. al. 8-9 lin.

Head and face drab. Eyes black. Palpi above and at the sides drab; straw-colour between and beneath. Antennæ drab above

and beneath; basal joint beneath clothed with whitish scales. Thorax drab, with a dark crimson crest behind, its sides paler drab. Patagia drab. Anterior wings drab or ochreous grey, thickly streaked with wavy rows of dark or iron-grey scales, and a pinkish flush on the disk towards the apex; the dorsal margin from near the base to the anal angle deep crimson; sometimes this is dull yellow; obliquely across the middle of the wing is a very faint indication of a fascia. In fine specimens the scales on the costa at the base and apex are rose-pink; a row of minute tufts, of the same colour as the wing, may be traced below the basal end of the costal incision, and a few others irregularly placed towards the apex. Apical scales iron-grey, with light drab bases. Cilia rose-pink, becoming iron-grey at the anal angle. Posterior wings shining, pale grey, with the apex slightly luteous; the freckles of the under-side showing through. Marginal scales grey, with white bases. Cilia grey at the extreme apex, the remainder whitish. Abdomen shining, grey, with the caudal tuft luteous. ♀ Exp. al. 9 lin. Anterior wings marked and coloured like the ♂, but with the iron-grey wavy streaks somewhat darker.

This singular species, although subject to much variation, can readily be distinguished from *all the other British Tortrices by the deep excavation* in the costal margin. The recorded varieties are five in number, and *inter se* tolerably constant. They may be distinguished by the colour of the anterior wings.

1st. Having the ground colour-drab or ochreous grey, *T. caudana* and *T. effractana*.

2nd. Having the ground-colour ochreous or ferruginous orange, *T. ochracea*, *emargana* and *excavana*.

Var. *T. caudana* (the var. formerly so called) has the excavation shallow, and appears to be only the worn aspect of *T. effractana*, when the rough semi-erect scales at the base and apex of the costa are worn off. This supposed var. is *never taken* in fine condition.

Var. *T. effractana* is the same as described above, and is the commonest form of the insect.

Var. *T. ochracea* has the anterior wings pale ochreous or buff, with very slight indications of streaks towards the base. *Beyond the notch*, the costa, apical and dorsal margins are irrorated with brown scales. Specimens of this variety are exceedingly scarce; one is in the cabinet of Mr. Edwin Shepherd, which he obtained from Mr. Bentley; another is recorded by Mr. J. A. Hill, as captured by himself at Almondsbury in Gloucestershire.

Var. *T. emargana* has the anterior wings *ochraceous or testaceous yellow, reticulated with rich brown*, with a broad fascia of the latter

colour occupying the apical portion, commencing before the notch on the costa, and attaining the dorsal margin.

Var. *T. excavana* is very like *T. emargana*, but has the ground-colour *ferruginous orange*, and the dark portion of the wing is paler, assuming an ashy or leaden hue.

The imago appears from July to September, and is generally distributed. It occurs in the Isle of Wight; at Bere Wood; near Dover; Devonshire, Somersetshire, Gloucestershire; New Forest; Caen Wood, near Hampstead; Coombe, Birch, and Darenth Woods; in Cheshire, Yorkshire, and the north of England; also in the vicinity of Edinburgh, at Carron, the Raehills, Dumfriesshire in Scotland; and at Belfast, in the county of Cork in Ireland.

The pupa is stout, 4 lines in length, and ferruginous in colour. The head, wing, and limb cases darker and shining, the abdomen dull; the caudal termination with a bifid hook.

The larva, according to Fischer von Roeslerstamm, is pale green, with a pale-yellow head, and affects the Sallow and Osier.

FAMILY V. **STIGMONOTIDÆ.**

In this division the costa of the anterior wings is always more or less regularly arcuated, *never* obtusely produced towards the base, as in the *Peroneidæ*, and a very frequent character is the pale blotch of various size and shape in the dorsal margin. [This also appears in many of the *Plicatæ*; but *there*, the folded costa being present, they are at once distinguished from this group.] The anterior wings are of varied length, as compared with their width, and in repose are held in a very deflexed position. The posterior wings are ample, sometimes very broad, slightly emarginate below the apex.

The habits of the larvæ are various, *i. e.* some feeding in united or rolled leaves, others beneath the bark, and some in the young shoots of trees.

There are eleven genera in this family, as shown in the following table:—

A. Anterior wings with the *costa nearly straight.*

a. Palpi with the *middle joint three times as long as the apical* 11. HEUSIMENE.

- B. Anterior wings with the *costa* slightly and regularly arcuated.
- a a. Palpi with the middle joint twice as long as the apical 8. ASTHENIA.
- a a a. Palpi with the middle joint nearly three times as long as the apical 10. PAMPLUSIA.
- C. Anterior wings with the *costa* arcuated.
- | | | |
|--|---|------------------|
| a a a a. Palpi with the middle joint not three times as long as the apical | } | 2. ANISOTÆNIA. |
| | | 7. STIGMONOTA. |
| a a a a a. Palpi with the middle joint three times as long as the apical | } | 1. PÆCILOCHROMA. |
| | | 6. EPHIPPIPHORA. |
| a a a a a a. Palpi with the middle joint more than three times as long as the apical | } | 9. RETINIA, |
| | | 4. SEMASIA. |
| a a a a a a a. Palpi with the middle joint four times as long as the apical | } | 5. EUCELIS. |
| | | 3. ROXANA. |
| a a a a a a a a. Palpi with the middle joint five times as long as the apical | | |

Genus I. PÆCILOCHROMA, STEPHENS.

Palpi longer than the head, remote, porrected horizontally, thickly clothed with scales towards the apex of the middle joint; basal joint drooping, stout, pyriform, truncate; apical slender, obovate, as long as the basal; middle stout, curved, ascending, thickest beyond the centre, more than three times as long as the apical. Maxillæ as long as the palpi. Thorax robust, ovate; in the typical species with a bifid crest or tuft behind. Anterior wings: length more than twice the width; costa regularly arcuated; apex obtuse; apical margin rounded; dorsal margin nearly straight. The discoidal cell lies nearly in the middle of the wing, and extends nearly two-thirds its length. The costal vein reaches the margin about one-third from the base. Posterior wings ample; apex sub-acute; apical margin concave. Abdomen slender, and tufted in the ♂, stouter in the ♀.

The typical species are liable to considerable variation as to colour; but, so far as is known among the British examples, never ornamented with streaks or spots of a metallic lustre. The variation is confined to the greater or less intensity of the markings, which does not, as in *Peronea*, alter their character. Some of the species are exceedingly common. The larvæ feed mostly on forest-trees; but one of them (*Pæc. Hawkerana*) feeds on *Euphorbia paralias* (the Sea Spurge), an herbaceous plant.

There are at present seven British species included in this genus, which are thus tabulated:—

- A. Anterior wings with a *white or whitish* blotch on the dorsal margin Species 1-3
 B. Anterior wings with the blotch *slightly paler* than the ground-colour Species 4, 5
 C. Anterior wings *without* a blotch on the dorsal margin Species 6, 7

1. **profundana**, Schiff. Alis anticis ochraceo-cinereis; fascia basi, medio maculaque postica brunneo-ustulatis; ad marginem dorsalem macula trigona alba, nigro punctata; posticis fuscis, basi albicantibus. ♂ Exp. al. $8\frac{1}{2}$ - $9\frac{1}{2}$ lin.

Head fuscous, drab over the eyes. Face white, fuscous above. Eyes purplish brown. Palpi white, the apex at the sides dusky. Antennæ fuscous. Thorax: in front fuscous, on the vertex ustulated brown, the crest ferruginous. Patagia: at the base drab, gradually becoming ferruginous at the apex. Anterior wings dull, extremely variable in colour, but usually with brown markings in shades, and mostly with a light-coloured or white blotch in the middle of the dorsal margin. The specimen before us has, at the base, a mottled umber patch, palest anteriorly, most intense posteriorly and on the dorsal margin, extending one-fifth along the costa, and one-third along the opposite margin, its edge obtusely angulated in the middle. Before the middle of the costa, and proceeding to the anal angle, is a distinctly-defined golden-brown fascia, dilated in the middle, its origin and termination being equally broad; its anterior edge is obtusely angulated, and interrupted towards the dorsal margin; its posterior edge is angulated *before* and *at* the middle, streaked longitudinally near the costa, and across the centre, with deep umber. In the apical region is a somewhat quadrate patch, deep umber anteriorly, and softening into golden-brown at the apical margin. The costa is marked throughout with produced geminated streaks; those before the central fascia are whitish, and reach a fuscous cloud below them; those beyond are drab, and intersect an ochreous-brown cloud at the apex; the apical spot distinct, and umber-coloured; the anal angle suffused with pale brown; and the dorsal edge of the white blotch is freckled with umber. Apical scales pale brown, freckled with umber. Cilia pale brown, alternated in the middle of the margin with umber patches. Posterior wings clothed with richly-coloured, coarse fuscous scales, paler at the base. Marginal scales darker fuscous, with pale bases. Cilia pale, speckled with grey, with a fuscous tinge. Abdomen fuscous, the caudal tuft ochreous-drab. ♀ Exp. al. $8\frac{1}{2}$ - $9\frac{1}{2}$ lin.

A common and a very variable species, both in the ground-colour, and in the intensity of the markings; the former ranging from drab to ochreous, olive, or fuscous; the latter, through the various shades of brown to deep umber; *the same character of*

marking, however, prevails throughout. In some specimens there is a pale or white blotch upon the dorsal margin; in others this blotch is the same as the ground-colour.

The imago appears from June to August, frequenting Oaks and other forest-trees. It occurs throughout the south and west of England; also in the midland counties, and in Norfolk.

2. *corticana*, Schiff. Alis anticis griseis; cinereo, fusco brunneo, virescente variis; macula ad marginem dorsalem subbifida, liturae anali albida; costa griseo fuscoque punctata; posticis fuscis.
♂ Exp. al. 6-8 lin.

Head and face pale grey, the latter slightly darker. Eyes black. Palpi: above dark grey, at the sides and beneath smoky-black, between iron-grey; terminal joint pale grey. Antennæ deep fuscous; basal joint clothed with grey scales. Thorax hoary-grey, the crest grey. Patagia; at the base tawny, the apex hoary-grey. Anterior wings dull greyish-drab, with olive-green and black markings speckled with white, and with a pale blotch on the dorsal margin. The costa is umber-brown, marked with geminated streaks of drab-colour more or less produced (the number of these streaks varies from seven to nine), succeeded by the apical spot. In the middle of the dorsal margin is a pale mark, in shape like a bird's head, with the beak directed towards the apical margin; nearer the base is a similar-coloured, but smaller and rounded, mark; the wing above and beyond both of these markings is rich brown, streaked with umber or black; the apical region is clouded with brown, speckled with drab and black. Apical scales greyish-drab, alternated with umber towards the apex, with white tips and pale drab bases. Cilia dull, consisting of a double row: the basal one dark grey; the apical paler, mixed with drab, and with white tips towards the anal angle, beyond which they all become umber-coloured. Posterior wings fuscous, paler at the base. Marginal scales fuscous, with paler bases. Cilia grey, with a fuscous tinge. Abdomen dark, shining grey, the caudal tuft drab. ♀ Exp. al. 6-8 lin.

Very common, and although extremely variable it is more constant than *Pæc. profundana*. The ground-colour ranges from pale drab to smoky black, going also through the gradations of olive and fuscous; frequently the ground-colour is green. The markings are mostly umbreous, though not uncommonly rifle-green, and black.

The imago appears in June and July, and may be taken in abundance off the trunks of Oaks. It occurs throughout the country; also in Scotland and in Ireland.

The pupa is 3 lines in length, and of a reddish-brown colour. The larva feeds on the Oak and Whitethorn.

3. **Bouchardana**, Doubleday. Alis anticis cinereis, apice fusco-ochraceis; basi macula brunnea, medio fascia indistincta fuscis; margine dorsali macula sub-trigona alba; posticis fuscis margine saturationibus. ♂ Exp. al. 5 lin.

Head varies from dull drab to smoky black. Face drab. Eyes black. Palpi dull drab. Antennæ dark brown. Thorax smoky black. Patagia ochreous drab. Anterior wings variable from cinereous to dull fuscous-ochre, with dark brown streaks and markings. At the base is a brown patch, with darker transverse streaks; it extends one-third along the costa, and the same distance along the dorsal margin, having its posterior edge straightish. At the middle of the costa originates an undefined fuscous fascia, dilated and widest on the dorsal margin. The apical region fuscous-ochre. At the middle of the dorsal margin is an irregular, somewhat triangular, white blotch. On the costa, before the *middle, are two, and beyond four*, whitish geminations. Marginal scales black. Cilia smoky black, with cinereous bases. Posterior wings fuscous, darker towards the margins. Marginal scales fuscous, with drab bases. Cilia yellowish white. Legs drab, speckled with fuscous. Abdomen umbreous, the apex fuscous. ♀ Exp. al. $5\frac{1}{2}$ lin. The colouring darker, and the markings more defined.

This species was taken by the late Richard Weaver a few years back, and subsequently by Mr. Bouchard in Morayshire, N. B., amongst fir-trees, and is, as yet, in but few cabinets.

It is allied to *Pæc. tenerana*, but is slightly larger in size, and readily distinguished from it by the *white blotch* upon the dorsal margin of the anterior wings.

4. **tenerana**, Dup. Alis anticis fusco-ochraceis; maculis, strigisque nigris, punctis argenteis sparsis; macula dorsali pallida triangulata; posticis fusco-griseis. ♂ Exp. al. 7 lin.

Head olive drab. Face somewhat paler. Eyes black, with a velvety appearance. Palpi as long as the head, fuscous, pale at the base beneath. Antennæ brown. Thorax and patagia dull ochreous, immaculate. Anterior wings slightly glossy, dull ochreous; with black or intense brown markings; on the costa are eight or nine geminated pale streaks with triangular amber interspaces, especially on the basal half, where two of them are very strongly marked; one situated about one-fifth from the base, the other just before the middle, the former is produced *as an amber streak to near the centre of the disk*, where it forms an acute angle, and recedes to the dorsal margin (softening towards the base), which it attains one-third from the margin; an irregular, undefined, and interrupted streak proceeds from the subcentral costal mark, ultimately reaching the dorsal margin. The apical region clouded with ochre towards the margin,

sometimes freckled with black. Apical scales umber or black, with alternated patches of brown (sometimes ochreous) and cream-colour. Cilia dark grey; with the bases narrowly ochreous, paler at the anal angle, black beyond. Posterior wings and marginal scales fuscous, the latter with cream-coloured bases. Cilia grey. Abdomen grey; the caudal tuft drab. ♀ Exp. al. 6 lin.

Rather common among Fir trees; variable in size and in the intensity of its markings.

The imago appears in June and July, and occurs at Mickleham, Sydenham, near Guildford; in Dorsetshire and other places in England, also in Scotland.

5. **Hawkerana**, Stevens, MSS. *Alis anticis fusco-cinereis, strigis obliquis punctisque costalibus fuscis; posticis griseis apice fuscescens*. ♂ Exp. al. 5-6½ lin.

Head and face pale drab, with a yellowish tinge. Eyes black. Palpi longer than the head; above and beneath pale drab, at the sides darker, the upper edge slightly dusky, between whitish. Antennæ pale fuscous. Thorax drab, with transverse darker lines. Patagia dull drab. Anterior wings dull drab, with an ochreous hue, and darker or dusky-ochreous markings; about one-third from the base, on the costa, commences an oblique abbreviated fascia, extending to just beyond the middle of the wing. At the middle of the costa is another fascia, slender and oblique, attaining the dorsal margin near the anal angle, and giving out on its anterior edge a short branch, which is directed to the middle of the dorsal margin; in the apical angle is another similar but fainter mark; on the costa are nine geminations: four *before* the middle, dusky; and *five beyond*, paler or whitish, and more defined; none produced. Apical margin with a row of umber-tipped scales, and the pale portions of the wing freckled with dusky brown. Apical scales and cilia with a speckled appearance, fuscous, with drab bases. Posterior wings fuscous grey. Marginal scales darker, with the bases paler. Cilia fuscous. Abdomen and caudal tuft drab, with a slight ochreous tinge. ♀ Exp. al. 5-5½ lin. In colouring more distinct than in the ♂.

This species was first captured by the Rev. W. H. Hawker and Mr. S. Stevens in 1855, at Hayling Island, Hants. It is exceedingly like *Pæc. tenerana* in appearance, but not so strongly marked; *is paler, of smaller size, and the triangular blotch on the dorsal margin is wanting.*

The imago appears in July, August, and September, flying at dusk and keeping close to the ground.

The pupa is amber-coloured, and about 3 lines long.

The larva feeds on *Euphorbia paralias* (the Sea Spurge), mostly

on the seeds, but it may sometimes be found between the young shoots. It is of a dull-drab colour, with a greenish tinge and a hazel-coloured head.

6. *signatana*, Douglas. Alis anticis albidis; basi macula rhombea, fascia media interrupta apiceque fuscis; linea nigra longitudinali undata pone medium. Macula ocellari grisea, atomis atris; posticis griseo-fuscis. ♂ Exp. al. 7-7½ lin.

Head and face drab, the latter slightly paler below. Eyes black. Palpi dull drab, paler between. Antennæ dull drab. Thorax in front pale fuscous, drab behind. Patagia at the base pale fuscous, the apex drab. Anterior wings glossy, dull pale drab; at the base is a pale rhomboid patch, made up of transverse umber streaks, most distinct *at* and *towards* the dorsal margin. At the centre of the costa originates an indistinct, pale fuscous fascia (sometimes interrupted); it is crossed near the middle, by a strongly-marked, longitudinal, umber-coloured line, which proceeds beyond it, dilating and curving upwards to near the apex; below the curve is the ocelloid patch, which is large and roundish, consisting of two broadish, pale, lustrous streaks, divided by a very pale fuscous cloud, in which are sometimes one or two black spots. The costa is pale fuscous, marked with geminated streaks; those beyond the central fascia most defined, produced and directed towards a point below the apical spot, which is distinct and concolorous with the costa: the pale portions of the wing streaked with dusky brown. Apical scales dark brown, with drab bases. Cilia fuscous, with drab bases, becoming with the apical scales paler at the anal angle, and iron-grey beyond it; a white streak runs through both, below the apical spot. Posterior wings pale fuscous. Marginal scales fuscous, with straw-coloured bases. Cilia straw-colour. Abdomen fuscous; the caudal tuft drab. ♀ Exp. al. 7-7½ lin.

This species was first noticed by Mr. J. W. Douglas, who described it in the 'Zoologist' for 1845, p. 844, as *Sericoris signatana*. He first captured it by beating a hedge at Sanderstead Downs. It varies somewhat in size, but little so in colour, and looks like a small, very pale *Pæc. profundana*, but may be distinguished from it by the *umbreous wavy streak above the ocelloid patch, which is never present in the latter species*; by this *same streak it may likewise be distinguished from Pæc. oppressana*, which it *even more* resembles.

The imago appears in July on the Downs near Croydon, and at Mickleham. It occurs also at Preston in Lancashire.

According to Herr Zeller, the larva feeds on *Prunus Padus*, the Bird Cherry.

7. **oppressana**, Treits. Alis anticis albidis, cinereo nebulosis; basi macula rhombea, fascia media interrupta fusco strigata, apice puncto fusco; posticis fuscis. ♂ Exp. al. 7 lin.

Head fuscous in front, drab behind. Face drab. Eyes black. Palpi as long as the head, drab. Antennæ drab, with a fuscous tinge. Thorax drab, streaked with pale umber. Patagia drab, with the base umbreous. Anterior wings dull drab, with umbreous and fuscous markings; at the base is a streaky patch of fuscous colour (sometimes umbreous), extending one-fifth along the costa, and one-third along the dorsal margin; its posterior edge is darkest, and forms an obtuse retreating angle beyond the middle. At the centre of the costa commences an irregular, oblique fascia; this proceeds two-thirds across the wing, where it is interrupted, and appears again within the anal angle; in colour it is deep fuscous, speckled with umber. In the apical region is an oval, fuscous spot, streaked longitudinally with dark umber; the pale portions of the wing are clouded and streaked with fuscous. The costa is geminated, the interspaces pale umbreous; a distinct spot at the apex. Apical scales umbreous, the tips drab. Cilia fuscous, interrupted by two white streaks running through them below the apex. Posterior wings pale fuscous, rather darker at the apex. Marginal scales fuscous, with yellowish bases. Cilia long and paler. Legs drab. Abdomen pale fuscous. ♀ Exp. al. 7 lin.

Unique in the cabinet of Mr. Henry Doubleday, who has a pair, taken, years ago, in Epping Forest.

In general appearance this species is most nearly allied to *Pæc. signatana*, but readily distinguished from it by *the absence of the longitudinal, wavy, umbreous line in the apical region of the anterior wings* of the latter species. It likewise bears some resemblance to *Spilonota dealbana* and its congeners, but it has *not* the solid basal patch characteristic of those species.

Genus II. ANISOTÆNIA, STEPHENS.

Antennæ two-thirds the length of the anterior wings. Palpi stout, longer than the head, ascending, remote, densely clothed with long scales towards the apex; basal joint stout, drooping, pyriform, truncate. Apical slender, obovate, as long as the basal; middle not so stout at the base as the basal, slightly thickening towards the apex, curved, ascending, not quite three times as long as the apical. Maxillæ as long as the palpi. Thorax slender in the ♂, stout in the ♀; ovate, tufted behind. Anterior wings: length more than twice the width. Costa arcuated, apex obtuse; apical margin slightly concave; dorsal margin nearly straight; venation normal. Posterior

wings: apex obtuse, apical margin slightly concave. Abdomen slender in the ♂, stouter in the ♀.

An aberrant genus, and of difficult location; at present containing but one species. It somewhat resembles *Pœcilichroma* in shape, but is more uniform in colour, although in this respect differing in the sexes.

1. *Ulmana*, Hub. Alis anticis *maris* ochraceis aut brunneis, nigro punctatis; ante medium fascia angusta irregulari aut interrupta pallide sulphurea vel alba; *foem.* fascia lata irregulari obliqua; posticis brunneo-ustulatis. ♂ Exp. al. 6 lin.

Head cream-colour in front, brown behind. Face cream-colour. Eyes black. Palpi as long as the head; above and at the sides pale fuscous, drab beneath; antennæ above fuscous, pale beneath; basal joint clothed with drab-coloured scales. Thorax and patagia bronze brown, the latter paler at the apex. Anterior wings bronze or golden brown, speckled with umber, glossy; before the middle of the costa is an oblique, somewhat quadrate, curved, white mark; in the middle of the wing on the median fold is another white mark, lozenge-shaped, this latter sometimes produced to the dorsal margin; between these two marks, but a little removed towards the apex, are several confluent, golden-lustred spots; the middle of the base and apical portion of the wing spotted with umber; beyond the middle of the costa are three golden-lustred spots, with a cluster of pale violet freckles below. Apical scales long, widely alternated with dusky brown, and dull, roundish, golden spots, about seven in number. Cilia shining drab, becoming iron-grey at the anal angle. Posterior wings rich brown, darkest at the apex. Marginal scales rich brown, the bases paler. Cilia shining grey. Abdomen dark brown. ♀ Exp. al. 6-6½ lin. Anterior wings with a broad cream-colour or white, slightly oblique fascia before the middle, dilated on its posterior edge, at the median fold; the basal patch is rich brown, spotted and margined with umber, its posterior edge undulated; the apical portion of the wing is of the same colour, and at the apex is a largish umber cloud, with another near the anal angle. On the costa are two whitish spots, that nearest the apex the smaller; the larger one is preceded by a patch of dark brown; below these whitish marks and at the anal angle, are lustrous pale violet clouds, with whitish margins; these latter constitute the ocelloid patch. Apical scales less mottled than in the ♂.

This is not an abundant species, and offers great disparity between the sexes, the ♀ being by far the larger. Wood's figure 'Ind. Ent.,' pl. 52, fig. 1679, represents the ♂.

The imago appears in June or July amongst Elms, Hazel, &c. It occurs in the south of England, particularly towards the south-

west; it has likewise been taken in Norfolk, and at Shustoke in Warwickshire. In Scotland it has been taken in the vicinity of Edinburgh.

Genus III. ROXANA, STEPHENS.

Palpi longer than the head, remote, ascending; basal joint drooping, elongate, truncate; apical minute, ovate, partly concealed by the long scales clothing the apex of the middle joint, not so long as the basal; middle joint ascending, curved, moderately stout, thickest beyond the centre, five times as long as the apical. Maxillæ longer than the palpi. Anterior wings: length equals twice the width. Costa regularly arcuated; apex obtuse; apical and dorsal margins slightly rounded. The discoidal cell extends scarcely two-thirds along the wing. The costal vein attains the margin about one-third from the base, subcostal nervures not equidistant. Posterior wings: apex obtuse; apical margin slightly concave, dorsal margin entire. Abdomen slender in the ♂, stout in the ♀, tufted in both sexes; the tuft small in the ♀.

Another aberrant genus. The only British species contained in it is included by Treitschke in his genus *Carpocapsa*, but independent of the very peculiar markings on the anterior wings, the structure of the palpi does not warrant such a location; the middle joint of these organs in this genus is *five times as long* as the apical, whilst in *Carpocapsa* it is only *twice the length*; the maxillæ too are *longer* in the latter genus. The larva is unknown.

There is another species on the continent, *R. Boisduvaliana*.

1. *arcuella*, Clerck. Alis anticis aurantaceisve pallide ferrugineis, nigro atroque punctatis, basi lineis tribus longitudinalibus, strigis arcuatis punctisque cæruleis; medio litura albida; posticis nigro-fuliginosis. ♂ Exp. al. $7\frac{1}{2}$ –8 lin.

Head dull brown, paler behind, whitish behind the eyes. Face drab. Eyes black. Palpi drab, the apex dusky, the apical joint black. Antennæ amber. Thorax glossy, dusky brown, with a few orange scales at the sides, towards the apex. Patagia dusky brown, mixed with ochreous or orange. Anterior wings dull; rich orange, clouded with umber and with metallic-lustred blue markings; at the base are three thick, lustrous blue streaks edged with umber, placed longitudinally, and extending one-fourth the length of the wing, one on the costa, the second through the middle of the base, and the third (a less distinct one) within the dorsal margin; before the middle is a similar-coloured concave streak, reaching from the costa to the dorsal margin, and another very curved one in the apical

angle, followed by a shorter one at the apex; between these is a very large ocelloid patch, which is clouded towards the costa with dull umber, followed by a *longitudinal white* patch, then by numerous jet-black freckles (largest in the middle) on an orange and white ground, intermixed with bright lustrous blue spots, and a curved streak towards the anal angle. The costa towards the apex marked with two small cream-coloured spots. Apical scales umber. Cilia iron-grey. Posterior wings and marginal scales umber, paler towards the base. Cilia iron-grey. Abdomen glossy umber, the apex slightly paler. ♀ Exp. al. 8–8½ lin.

Not a very common species: varies in size, but is constant in colour.

The imago appears in May, June, July, and August, among Oaks. It occurs at Coombe, Darenth, and Greenhithe Woods; at Hampstead, and other places round London; in the New Forest, &c.; also in Ireland. It seems attached to the common brake—*Pteris aquilina*, as it is frequently found settling on that plant; and it is by some practical entomologists supposed that the larva may feed in the roots thereof.

Genus IV. SEMASIA, STEPHENS.

Palpi as long as the head, remote, ascending, densely clothed with scales beneath; basal joint drooping, elongate, stout, truncate; apical minute, oval, not so long as the basal; middle ascending, curved slightly, somewhat thicker beyond the centre, four times as long as the apical. Maxillæ as long as the palpi. Thorax robust, ovate. Anterior wings: length equals twice the width. Costa regularly arcuated; apex obtuse; apical margin rounded, dorsal margin straight. The discoidal cell is situated in the upper half of the wing, and does not extend two-thirds its length. The costal vein attains the margin before the middle, subcostal nervures not always equidistant. Posterior wings: apex subacute, apical margin very slightly concave, dorsal margin entire. Abdomen moderately stout and tufted in both sexes, suddenly acute in the ♀.

This genus is now somewhat increased in extent, in consequence of its being necessary to find more natural locations for such species as have been discarded from other groups, in which they had been previously included, but which could not be retained there, in consequence of their not bearing the folded costa. The insects now associated together are of small size (*S. Wæberana* excepted), but whether they will all ultimately maintain the positions now assigned to them, a more intimate knowledge of the preparatory states and of the larvæ will show.

The following table is constructed for the arrangement of the eight British species.

- | | |
|--|-------------|
| A. Anterior wings with a <i>white or whitish blotch</i> on the dorsal margin | Species 1-3 |
| B. Anterior wings with an <i>obscure streaked blotch</i> on the dorsal margin | Species 4-6 |
| C. Anterior wings with a <i>pale fascia more or less distinct</i> beyond the basal patch | Species 7-8 |

1. **Populana**, Fabr. Alis anticis brunneis obscuris; costa postice aureo atroque punctata; macula medio marginis dorsalis subquadrata alba; posticis fuscis obscuris. ♂ Exp. al. $5\frac{1}{2}$ lin.

Head dusky brown, paler in front. Face dusky brown, paler below. Eyes black. Palpi as long as the head, drab above, grey beneath, whitish between. Antennæ deep brown and glossy. Thorax and patagia fuscous, the latter paler at the apex. Anterior wings glossy, wholly suffused with rich reddish brown, with lustrous blue streaks and a sulphur-coloured blotch upon the dorsal margin; the base, especially towards the costa, with a violet tinge, merging into rich glossy chestnut-brown to the anal angle. The costa is marked with seven oblique geminated streaks, of which the first and third from the base, are longest and of a lustrous blue colour; towards the apex these streaks are of a golden lustre, and short, with rich brown markings between; at the apex is a distinct, eye-like spot. The apical portion of the wing rich brown, with a reddish, metallic lustre, and speckled with golden markings; in certain lights these latter have a violet tinge, especially those constituting the ocelloid patch, in which are some strongly-marked, longitudinal, black lines. The dorsal blotch is sulphur-yellow, somewhat triangular, and produced at its apex, with an elongated mark, and a smaller one on the margin. In general appearance it is not unlike the letter Y. Apical scales umber. Cilia fuscous. Posterior wings rich chestnut-brown, with a violet tinge; marginal scales of similar colour, the bases paler. Cilia fuscous. Abdomen shining, deep brown.

An uncommon species, and does not vary; smaller than *Halonota tetragonana*, but of the size of *Semasia spiniana*. It is distinguished from the former by the more distinctly-geminated costa, and the defined, triangular Y-shaped mark on the dorsal margin; from the latter, which it most resembles, by the black mark in the middle of the dorsal blotch, which is wanting, or very faintly expressed in *S. spiniana*.

The imago appears in July, August, and September, among Sallows, in the Metropolitan district.

The larva is active, $3\frac{1}{2}$ lines in length, of a translucent, whitish-green colour, and isometric in shape; the head jet-black, heart-

shaped, shining; the shield is also jet-black and shining behind, whitish green in front, not divided by a dorsal line; the spots on the body are small, smoky coloured; the twelfth segment bearing darkish oval spots, the anal segment with a large roundish smoke-coloured patch; on the under surface of a yellowish-green colour, the legs inclining to ferruginous. It feeds upon the Sallow, on the young leaves and shoots, and before assuming the pupa state it spins a white silken web between the leaves of the food plant.

2. *spiniana*, Fisch. v. R. MSS. Alis anticis purpureo-brunneis, nebulis atris; costa strigis productis violaceis; macula medio marginis dorsalis trigona sulphurea pallida vel alba; posticis brunneo-ustulatis. ♂ Exp. al. $5-5\frac{1}{2}$ lin.

Head dull smoky brown. Face rather paler than the head. Eyes black. Palpi as long as the head, smoky black. Antennæ deep fuscous, shining. Thorax and patagia dull brown. Anterior wings chestnut-brown, darkest at the base, with a triangulate pale sulphur-coloured or white blotch upon the dorsal margin. The costa is marked with produced geminated streaks, both before and beyond the middle, of a slightly violet-colour; those towards the apex also with a golden tinge. The apical spot dark and distinct. The base is streaked transversely with violet-tinged wavy lines, and from the middle of the costa proceeds a rich dull brown fascia, with angulated edges, and dilating as it attains the dorsal margin. The ocelloid patch is indistinct, and consists of a golden-brown mark with longitudinal black lines. The dorsal blotch with a very small dusky mark at the margin. Apical scales umber. Cilia shining, iron-grey, becoming dull brown at the anal angle. Posterior wings rich bronze-brown, with a purplish tinge towards the base. Marginal scales fuscous, with straw-coloured bases. Cilia pale fuscous, with an ochreous tinge. Abdomen dark fuscous, the caudal tuft drab. ♀ Exp. al. $5-5\frac{1}{2}$ lin. Rather paler than the ♂, and the violet-lustred streaks more evident.

Rather a common insect, and tolerably constant. In size and appearance it mostly resembles *S. Populana*, but is distinguished from it by the blotch on the dorsal margin, being smaller, more regularly triangular, and almost destitute of markings therein.

The imago appears from June to August, in hedges, at Darenth, Birch, and Wickham Woods, near Croydon, Mickleham, in Cheshire, &c. It likewise occurs in the vicinity of Dublin.

3. *obscurana*, Steph. Alis anticis brunneis obscuris, nebulis saturatoribus; costa strigis geminatis albis; macula medio marginis dorsalis albida; posticis fuscis, apice saturatoribus. ♂ Exp. al. $5\frac{1}{2}$ –6 lin.

Head fuscous on the vertex, pale drab at the sides, in front, and behind. Face pale drab. Eyes black, edged with whitish scales behind. Palpi drab, speckled with brown, the apical joint black. Antennæ dark shining brown, streaked. Thorax dull brown, streaked with dark drab at the base. Patagia drab at the base and apex, dull brown at the shoulder. Anterior wings glossy, rich chestnut-brown, with lustrous blue markings towards the apex, and an irrorated cream-coloured blotch on the dorsal margin; on the costa are seven oblique, light-coloured streaks, of which the four nearest the apex are brightest, sharpest, and of a golden lustre; the first, second, third, and fifth are produced into streaks of a bright lustrous blue colour; the last attaining the apex below the apical spot, where it becomes golden. The ocelloid patch is marked by three curved streaks, which are sometimes golden, at others of a pale lustrous violet tinge, the space between them being dull ochreous, marked with longitudinal black lines; the apex and apical margin ochreous, mixed with black scales. The dorsal blotch cream-colour, irregular in shape, defined at its edges, and irrorated with dusky-brown atoms. Apical scales black, with white tips, and interrupted by a whitish streak below the apical spot. Cilia very glossy, smoky black, with paler bases, merging into brown at the anal angle. Posterior wings clothed with coarse rich brown scales, darkest at the margins. Marginal scales rich brown. Cilia grey. Abdomen deep brown. ♀ Exp. al. 6 lin.

Rather a rare species, but not variable.

The imago appears in June and July, and occurs at Darent and other woods within the Metropolitan district; also in Worcestershire.

4. *Wœberana*, Schiff. Alis anticis ochraceis aurantiacis, maculis strigisque atris; costa strigulis flavis; macula ocellari magna aurea, strigis quatuor longitudinalibus atris; posticis brunneofuliginosis, apice saturatoribus. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head dull brown on the vertex, yellow behind, and round the eyes. Face dull brown. Eyes black. Palpi longer than the head, ochreous above and beneath; the apex broadly smoky black, a spot of the same colour on the sides. Antennæ shining brown. Thorax and patagia dull umber, streaked with ochreous. Anterior wings dull, with dark umber and orange markings, and with lustrous blue streaks towards the costa. The base, middle, and anal angle with umber patches, edged with orange. Before the middle of the costa are two oblique lustrous blue streaks, edged narrowly with umber on

an orange-ground; the innermost is interruptedly and obscurely continued to the dorsal margin; beyond the middle of the costa is a long, very oblique lustrous blue streak, edged with umber on an orange-ground, and attaining the apical margin below the tip of the wing. Above this streak the costa is alternately marked with four umber and golden-lustred streaks, beyond which is an umber apical spot. Below this streak, towards the middle, is a lustrous blue spot, edged with umber on an orange-ground. The ocelloid patch is umber, streaked longitudinally with orange, and edged with three bright copper-lustred patches. On the dorsal margin is an orange blotch with three streaks running through it, the centre one being a continuation of the markings above it. Apical scales umber, with slightly paler bases; cilia shining smoky black; both are *thrice interrupted*, once by an orange streak below the apex, again by a similar streak towards the anal angle, and lastly by a whitish streak beyond it. Posterior wings dull, rich dark brown, slightly paler at the base. Marginal scales same colour, bases pale. Cilia whitish, sometimes straw-coloured. Abdomen dark brown, the caudal tuft dusky drab. ♀ Exp. al. $7\frac{1}{2}$ –8 lin.

This most beautiful species is common in fruit-gardens and orchards. It varies in size, but is constant in colour.

The imago appears continuously from June to September among fruit-trees, and occurs throughout the country; also in the vicinity of Edinburgh; likewise at Belfast in Ireland.

The larva feeds under the bark of the apple, plum, cherry, peach, apricot, almond, and laurel trees. It is of a pinkish-white colour, and goes into pupa about April.

5. *Ianthinana*, Dup. Alis anticis sordide ochraceis, strigis purpureo-brunneis; costa strigis geminatis, apice aureo; posticis fuscis. ♂ Exp. al. $4\frac{1}{2}$ lin.

Head dull fuscous brown, sometimes with an ochreous tinge. Face paler, especially below. Eyes black. Palpi as long as the head, cream-colour, slightly darker above. Antennæ dark fuscous, paler beneath. Thorax rich brown, paler in front. Patagia paler than the thorax, and with an obscure rosy tinge at the apex. Anterior wings dull pinkish drab, thickly streaked with brown. From the base to beyond the middle, the wing is streaked transversely with wavy dark brown lines; the apical portion also streaked with brown, but of a richer hue, more suffused and interruptedly. The streaks on the costa assume the geminated form, are dull towards the base, and have a golden lustre towards the apex; the apical spot dull orange, with a black centre, preceded by a pale or whitish mark upon the costa. The apical margin is orange, mixed with black, and midway between the apical spot and the anal angle is a conspicuous, but small, dark brown dot. The ocelloid patch is brown, suffused with orange, and marked with longitudinal black lines. In certain

lights the costal streaks are seen to be produced into slightly lustrous pale-violet markings. Apical scales umber, with paler bases, twice interrupted by dull orange streaks running through them, once *below the apical spot*, and *again towards the anal angle level with the dot on the margin*. Cilia shining, iron-grey, with a golden lustre, becoming paler at the anal angle. Posterior wings fuscous, pale at the base. Marginal scales fuscous, with the bases pale ochreous. Cilia dull straw-colour; *at and towards the anal angle* SCANTY, and short. ♀ Exp. al. 5 lin. The posterior wings rounder than in the ♂, and *the cilia towards the anal angle neither scanty nor short*.

This is a somewhat common species, constant in size and colour; very like *S. rufillana*, and till lately mixed with it in our cabinets. It may, however, be distinguished by its broader anterior wings, and by their apices being orange-coloured.

The imago appears from the end of June to the beginning of August, in chalky and sandy places. It occurs on the downs near Croydon, and in woods in the Metropolitan district; likewise in Norfolk, Cheshire, Devonshire, and in the New Forest. It also occurs in Ireland.

The puparium is 4 lines long, amber-coloured, and transparent, with the segments beyond the wing-cases opaque yellow, inclining to red.

The larva is flesh-coloured, and has been bred by Mr. T. Boyd.

6. *rufillana*, Zell. Alis anticis brunneis obscuris, atro strigatis purpurascensibus; costa strigis ochraceis; macula ocellari punctis atris; posticis nigro-fuliginosis. ♂ Exp. al. $4\frac{1}{2}$ lin.

Head dusky drab in front, dusky brown behind. Face dusky drab above, paler below. Eyes black. Palpi as long as the head, drab; somewhat paler below. Antennæ above fuscous, drab beneath. Thorax dusky brown, with a purplish tinge. Patagia same colour as the thorax; the apices paler. Anterior wings with a subdued gloss; rich purplish brown; and a pale violet lustre, streaked with dark umber; very like *Semasia Ianthinana*, with which it has been confounded, but the base of the wing is much less streaky. The costa is faintly streaked throughout, the apical half bearing simple golden-lustred marks; from the subapical one of which proceeds a slender curved line to the anal angle, at first lustrous blue, then somewhat golden. Apical margin narrowly ochreous. Apical scales dark umber, or black. Cilia glossy, dark leaden colour, somewhat rosy towards the anal angle. Posterior wings glossy bronzy brown. Marginal scales fuscous, with drab bases. Cilia fuscous, paler at the tips. Abdomen umber; the apex fuscous. ♀ Exp. al. 5 lin. Head, face, and palpi pale dull ochreous; thorax and patagia fuscous; anterior wings marked as in the ♂, but somewhat more dilute in colour.

Not of very frequent occurrence; constant in size and colour. It very much resembles *S. Ianthinana*, but is somewhat darker in its tints.

The imago appears in July and August among *Umbelliferae*. It occurs in dry, sandy, or chalky places; at Mickleham, near Croydon, Dover, and other places in the south; also in Cheshire.

The larva is flesh-coloured, with a dark head, and feeds on *Daucus carota* (the Wild Carrot) in the autumn, among the seeds; and the perfect insect has been bred from that plant by Mr. Thomas Boyd and Mr. W. Thompson of Crewe.

7. *nanana*, Kuhlw. Alis anticis cinereis, nebulis strigis maculisque saturatoribus brunneis; costa strigis 5-6 geminatis albis; posticis fuscis. ♂ Exp. al. $4\frac{1}{4}$ - $4\frac{1}{2}$ lin.

Head olive-drab. Face paler. Eyes black. Palpi dull drab, as long as the head. Antennæ dull fuscous. Thorax dusky olive-drab. Patagia paler. Anterior wings dull brown, with darker streaks and markings. At the base is a streaked brown patch, deepest on its posterior edge, where it is angulated in the middle and extending further on the dorsal than on the costal margin. From the middle of the costa to within the anal angle proceeds an irregular and indistinctly-defined fascia; apex clouded with brown; the costa more or less marked with white, sometimes in the form of geminated streaks; the apical spot smoky black; the ocelloid patch is faintly indicated by a slightly lustrous undefined cloud. Apical scales black or intense brown, interrupted by a white streak below the apex. Cilia iron-grey. Posterior wings dusky fuscous. Marginal scales iron-grey, with paler bases. Cilia long and grey. Abdomen blackish brown, the caudal tuft dull drab. ♀ Exp. al. $4\frac{1}{4}$ - $4\frac{1}{2}$ lin. More distinctly marked than the ♂.

A very common species, and the size of *S. Vacciniana*, which it somewhat resembles, but is distinguished from it by its *narrower and more suffused anterior wings*. It varies in the intensity of its markings.

The imago appears in June in abundance, among Spruce Firs, and occurs wherever those trees grow, in the south of England.

8. *Vacciniana*, Tisch. Alis anticis griseis nitido-subargenteis; basi macula magna, pone medium fascia obliqua distincta, altera abbreviata ad apicem brunneis; costa strigis albis geminatis; posticis brunneo-ustulatis. ♂ Exp. al. 4- $4\frac{1}{4}$ lin.

Head and face fuscous. Eyes black, with a velvety appearance. Palpi as long as the head; fuscous; the apex paler. Antennæ

fuscous. Thorax and patagia fuscous. Anterior wings pale bluish, shining grey, with umber fasciæ and markings. At the base is a large streaky umber patch, somewhat shining and grey, nearly to its edge, which is rounded and slightly undulate. At the middle of the costa commences a sharply-defined fascia, its anterior edge concave, narrow from its origin to the middle of its course, then suddenly dilated to double the width to the dorsal margin, which it attains towards the anal angle. On the costa are six geminations, two before the central fascia and four beyond, with umber interspaces; those towards the apex are produced, and unite into a curved mark which proceeds along the apical region. Apical spot distinct. At the anal angle are one to two umber streaks. Apical scales umber, with the tips drab. Cilia iron-grey, with patches of pale umber, and the tips pale. Posterior wings dull, pale umber. Marginal scales fuscous, with yellowish bases. Cilia long, drab. Abdomen slightly glossy, umber, the caudal tuft dull drab. ♀ Exp. al. 4-4½ lin.

Tolerably abundant where the food-plant grows. Of the size of *S. nanana*, but has its *anterior wings broader and more distinctly fasciated*. It is not very variable either in size or colour.

The imago appears in April, May, and June; the ♂ flying in the afternoon, the ♀ at rest. It occurs in Devonshire and in the north of England; also near Dublin.

The larva feeds on *Vaccinium myrtillus* (the Bilberry), and may be found thereon in June, July, and August.

GENUS V. EUCELIS, HUB.

Palpi as long as the head, remote, ascending. Basal joint moderate, drooping, truncate; apical minute, oval, not so long as the basal; middle ascending, curved, nearly isometric, about four times as long as the apical. Maxillæ longer than the palpi. Thorax robust, trigonate behind. Anterior wings: the length rather more than twice the width. Costa slightly and regularly arcuated. Apex obtuse. Apical margin rounded, dorsal margin straight. The discoidal cell lies in the upper half of the wing; does not extend two-thirds its length. The costal vein attains the margin before the middle. Subcostal nervures not equidistant; the second, third, fourth and fifth apical nervures nearly parallel. Posterior wings ample; apex acute; apical margin slightly concave, dorsal margin entire; basal angle slightly produced. Abdomen stout in both sexes, suddenly acute in the ♀.

There is only one British species in this genus, and no other appears to be known upon the Continent. It may be distin-

guished from all other British *Tortrices* by the *two large yellow spots on each of the anterior wings*. By M. Guenée it is placed in his Catalogue under the generic name "*Trycheris*," but, as it is unaccompanied by any characters, we have elected the prior one of Hübner's. The larva appears to be unknown. Does it feed on the roots of the Umbelliferæ?

1. *aurana*, Fabr. Alis anticis brunneis; macula magna quadrata margine dorsali, altera apicem versus rotunda aurantiacis; posticis fuscis. ♂ Exp. al. 5 lin.

Head and face ashy grey. Eyes black. Palpi as long as the head. Antennæ dark brown. Thorax and patagia ashy grey. Anterior wings glossy, pale chocolate-brown, with a large orange-coloured, somewhat quadrate, blotch on the dorsal margin, and another in the apical angle of similar size and colour, but of a slightly richer tint, and of roundish form. Apical scales dark dusky brown. Cilia iron grey. Posterior wings and marginal scales dull fuscous, the latter with pale yellow bases. Cilia pale fuscous. Abdomen dull brown. ♀ Exp. al. 5 lin. Colours and markings as in the ♂, but more dilute.

A rather common species on umbelliferous flowers, and tolerably constant in size and colour; sometimes, however, the dorsal spot on the anterior wings is produced into a triangular blotch.

The imago appears in June and July, flying at midday in the sunshine. It occurs at Darenth Wood, Ripley, Hertford, near Croydon, and a few other places round London; in Gloucestershire, Cheshire, and Lancashire; abundant in Yorkshire; also at Renfrew, and in the vicinity of Edinburgh; generally distributed in Ireland.

Genus VI. EPHIPPIPHORA, DUPONCHEL.

Palpi slightly longer than the head, remote, ascending. Basal joint slender, curving upwards, truncate; apical obovate, slender, not so long as the basal; middle not stouter than the basal, curved ascending, isometric, three times as long as the apical. Maxillæ as long as the palpi. Thorax ovate, moderately stout. Anterior wings considerably longer than twice the width. Costa regularly arcuated. Apex obtuse. Apical margin rounded, dorsal margin straight. The discoidal cell lies in the upper half of the wing, extends about two-thirds its length, and receives an internal nervure inserted towards the second subcostal nervure, which crosses to the second apical nervure. Subcostal nervures not equidistant. The costal vein attains the margin before the middle. Posterior wings: apex

obtuse; apical and dorsal margins entire. Abdomen stout in both sexes, suddenly acute in the ♀.

This genus is now very much restricted, but, with the exception, perhaps, of the last species, forms a natural group. The insects comprised in it are of moderate size, and are mostly remarkable for the clearly-defined, usually yellow-coloured dorsal blotch. The larvæ are but little known, and they mostly feed in or under the bark of trees.

The British species are four in number, and are arranged as follows:—

- A. Anterior wings with a *distinctly-defined* blotch upon the dorsal margin.
 - a. The blotch *bright yellow* Species 1, 2
 - b. The blotch *white* Species . 3
- B. Anterior wings with an *indistinctly-defined* blotch on the dorsal margin Species . 4

1. **Trauniana**, Schiff. Alis anticis atro-purpureis; macula magna oblonga quadrata margine dorsali flava; costa strigis flavis; posticis purpureo-brunneis. ♂ Exp. al. 5½–6 lin.

Head and face dull umber, inclining to smoky black. Eyes black. Palpi as long as the head, umber, inclining to ochreous at the base, beneath. Antennæ: above umber, beneath inclining to grey. Thorax and patagia dull umber. Anterior wings glossy umber, with an olive-brown tinge; a broad yellow blotch on the dorsal margin, and yellow streaks on the costa. On the costa, before the middle, are two (sometimes three), and beyond are five, bright yellow wedge-shaped marks, arranged in sub-geminations, which are sometimes produced into lustrous blue streaks. The dorsal patch occupies more than *one-third the length of the margin*; its anterior edge is *oblique*, and the posterior somewhat rounded or convex, but is *arcuated towards the costa*. The ocelloid patch is obscure, and represented at the anal angle by slightly-defined leaden lustrous streaks. Apical scales: at their tips umbreous, with dusky ochreous bases. Cilia very glossy, umbreous; in certain directions of a grey appearance. Posterior wings rich deep golden brown, approaching umber, clothed with coarse scales. Marginal scales dark fuscous, with dusky-drab bases. Cilia glossy, drab, inclining to white at the anal angle. Abdomen umber, the apex paler. ♀ Exp. al. 5¾–6 lin. Head, face, and palpi paler than in the ♂, inclining to olive-brown; the ground-colour of the anterior wings also slightly paler.

Rare in cabinets; constant in size and colour; very closely allied to *E. regiana*, but is *much smaller*. The dorsal blotch, however, is *much larger in proportion to the wing*, and the shape of it differs; its anterior edge is *straight*, and the posterior edge

rounded, whilst in *E. regiana* it is the reverse. M. Guenée gives this as a var. with a mark of doubt; but it is sufficiently distinct to rank as a species.

The imago appears in June and July, flying round the tops of Maples (*Acer campestre*). It has been taken at Plumstead, and near Bexley in Kent.

Most probably the larva may be found feeding either in or under the bark of the Maple.

2. *regiana*, Zell. Alis anticis atro-purpureis; macula magna angulata margine dorsali flava; costa strigis flavo-albidis, ad apicem lineis cæruleis; posticis purpureo-brunneis. ♂ Exp. al. 6-6½ lin.

Head dusky-olive drab, paler in front and behind. Face dusky-olive drab above, pale drab below. Eyes black. Palpi as long as the head, pale drab; in some specimens with a slight ochreous tinge. Antennæ dark fuscous and glossy. Thorax and patagia smoky olive-brown. Anterior wings dull umber, merging into smoky olive-brown at the base, with yellow markings on the costa, a large rich yellow blotch on the dorsal margin, and lustrous blue streaks at the apex. On the costa, before the middle, are two dusky geminated streaks, and beyond are five simple rich yellow ones; those before the middle, each unite, and are produced into a lustrous blue streak; of the yellow streaks beyond the middle, the first and third are also produced into blue lustrous streaks, the former to the inner mark of the ocelloid patch, the latter to a point below the apical spot. The ocelloid patch is not always defined, but is usually bounded by three lustrous blue streaks, enclosing some black or black-and-yellow longitudinal lines. The dorsal blotch has its inner edge rounded, and is truncate posteriorly (when the wings are closed the united blotches assume the form of a bishop's mitre), is frequently immaculate, but sometimes it has two or more spots or streaks upon the margin. Apical scales broad, intense brown at the apex, sometimes speckled with yellow, especially towards the anal angle; interrupted below the apical spot. Cilia glossy, iron-grey. Posterior wings and marginal scales rich purplish brown, the latter with pale bases. Cilia whitish. Abdomen glossy, umbreous. ♀ Exp. al. 6-6½ lin.

A common species; constant in size and colour; closely resembles *E. Trauniana*, but is larger. The dorsal blotch is smaller in proportion to the size of the wing, and has its posterior edge straight, and the anterior edge rounded.

The imago appears in June and July amongst Sycamore-trees (*Acer pseudo-platanus*), and appears to be generally distributed about the country, but more plentifully in the south; also in Ireland.

The pupa is $3\frac{1}{2}$ lines long, and amber-coloured.

The larva is dirty white, from 4 to $4\frac{1}{2}$ lines long; the head hazel, with the sutures chestnut-colour; the shield luteous, very transparent, the base clouded with hazel, and divided by a pale dorsal line; the spots are oval, pale smoky-black, edged with opaque white, slightly raised and shining; the anal segment has a large pale smoky-black oval patch on the vertex. It makes a cocoon lined with white silk, covered externally with the gnawings of bark, under the loose pieces of which it may be found in the autumn and winter. It does not go into pupa until April, or the beginning of May.

3. *argyrana*, Hüb. Alis anticis cinereis, nebulis strigis fusco brunneo variis; macula oblonga medio marginis dorsalis fusco-strigata; posticis *maris* basi pallidis, marginibus atris; *foem.* fuscis, basi dilutioribus. ♂ Exp. al. 4-6 lin.

Head drab and black, paler behind. Face drab. Eyes black. Palpi drab, mixed with black, paler beneath. Antennæ shining, dusky drab. Thorax and patagia umber, mixed with drab; the latter paler, especially at the apex. Anterior wings dull, variegated with umber, ochreous, and white, with a large white blotch upon the dorsal margin. At the base is a rhomboid patch, streaked with dark-umber transverse lines, its posterior edge darkest, and sharply angulated on the dorsal margin. At the middle of the costa is a broad oblique umber streak, suffusing with the basal patch and the pale-umber colouring of the apical portion of the wing. Before the middle of the costa are two, and beyond four, white geminated streaks; the interspaces umber. The first and third of the apical streaks are produced into silvery undulating lines to the anal angle, which, in their nether portion, with the yellow mark between, spotted with black, form the ocelloid patch; this yellow mark is continued to the costa, and above the ocelloid patch is crossed by an elongated umber cloud. The apical spot distinct, and with the margin marked with black and yellow scales; below the spot is a white mark; a white streak runs up from a similar-coloured patch at the anal angle. The dorsal blotch is quadrate in form, and streaked with wavy black lines. Apical scales black, with the tips yellow. Cilia dusky grey, or pale brown, somewhat mottled, both becoming white at the anal angle. Posterior wings smoky black, with a broad pale patch within, which is white at the base, its outer extremity merging into pale fuscous. Marginal scales smoky black, with yellowish bases. Cilia white. Abdomen umbreous. ♀ Exp. al. $5-6\frac{1}{4}$ lin. Posterior wings fuscous, palest at the base; marginal scales fuscous; cilia pale grey.

A very common species; variable in size, but tolerably con-

stant in colour; distinguished from its congeners by the *large maculated pale triangular blotch on the dorsal margin*, and by the *pale base of the posterior wings in the ♂*.

The imago appears in April and May; abundantly in Oaks; and is distributed throughout the country. It is likewise common in the vicinity of Edinburgh, near Greenock, &c.

The larva feeds in the bark of Oaks.

4. *nigricostana*, Haw. Alis anticis brunneo-ustulatis, nebulis saturatoribus; macula magna irregulari medio marginis dorsalis ochracea; posticis nigris. ♂ Exp. al. $5\frac{1}{2}$ –6 lin.

Head smoky brown, slightly paler behind. Face smoky brown. Eyes black. Palpi longer than the head: dull, dusky brown above and at the sides, drab beneath. Antennæ deep fuscous. Thorax and patagia dark dusky brown. Anterior wings glossy umber, with slightly-lustrous clouds and streaks, and a large dusky-ochreous blotch on the dorsal margin, of an irregular, indistinctly-defined, triangular shape, and produced at the apex. The costa is spotted throughout with dark umber, and the ocelloid patch is indicated by a leaden-coloured cloud. The costal and apical regions are slightly shining, with dull, umber markings, especially near the edge of the dorsal blotch near the base, at the middle of the costa, within and above the anal angle, and on the apical margin. Apical scales umber. Cilia dusky brown. Posterior wings rich bronze. Marginal scales same colour, with paler bases. Cilia fuscous grey. Abdomen deep brown. ♀ Exp. al. $5\frac{1}{2}$ –6 lin.

Far from abundant; it varies in size and in the intensity of its colouring.

The imago appears in June and July, in hedges and on banks, flying in the afternoon. It occurs throughout the south and in the west of England, among *Stachys sylvatica* (Hedge-Woundwort), in the root of which plant the larva is said to feed.

Genus VII. STIGMONOTA, GUENÉE.

Palpi slightly longer than the head, remote, diverging: basal joint curving upwards, elongate, truncate; apical straight, obovate, as long as the basal; middle as stout as the basal, slightly thickened towards the apex, ascending, curved, not three times as long as the apical. Thorax slender, ovate. Anterior wings: length more than twice the width; costa regularly arcuated; apex obtuse; apical and dorsal margins rounded; the subcostal nervures equidistant; costal vein reaching the margin before the middle. The discoidal cell receives a nervure inserted between the first and second subcostal nervures,

passing to the base of the second apical nervure. Posterior wings: apex acute, slightly concave below the apex; dorsal margin entire; basal angle produced. Abdomen stout in both sexes, tufted in the ♂, suddenly acute in the ♀.

A genus of considerable extent, and comprising several species of rare occurrence; they are mostly of small size, and very different in appearance, but, *inter se*, not given to much variation. The anterior wings are of dark and mottled colours, with slightly metallic-lustred markings. The larvæ are only partially known; but the perfect insects are found as well among forest-trees as upon low herbage.

There are nine British species, as arranged in the following table:—

A. Anterior wings dark coloured, with an <i>indistinctly-marked fascia</i>	Species 1, 2
B. Anterior wings with numerous <i>transverse black lines</i>	Species . 3
C. With a distinct <i>white or silvery curved blotch or lunule</i> on the dorsal margin.	
<i>a.</i> The blotch <i>wide, curved and bearing three streaks</i>	Species 4, 5
<i>b.</i> The blotch <i>narrow, curved and bearing one streak</i>	Species 6, 7
<i>c.</i> The blotch <i>narrow, curved and bearing a spot on the margin</i>	Species . 8
<i>d.</i> The blotch <i>narrow and curved, but without streaks or spots</i>	Species . 9

1. *nitidana*, Fabr. Alis anticis purpureo-brunneis; medio strigis duabus angulatis cinereis, punctis duobus costalibus geminatis argenteis; posticis fuscis. ♂ Exp. al. 4 lin.

Head dusky olive-brown. Face white, inclining to cream-colour above. Eyes black. Palpi as long as the head, white. Antennæ glossy, olive-brown above, dull drab beneath, inclining to ochreous at the base. Thorax deep fuscous. Patagia paler. Anterior wings umber, with paler markings, and metallic-lustred streaks upon the costa. At the base is a rhomboid umber patch, darkest posteriorly; it extends one-third along the dorsal margin, but scarcely so far along the costa. The basal patch is succeeded by an angulated fascia, of similar colour, defined on its outer edge, but softening off anteriorly; beyond, the wing is suffused with umber. Between the basal patch and the central fascia, on the costa, are two pale streaks, which are produced to the dorsal margin, where they dilate, forming one obscure blotch. Beyond the middle, the costa is marked with four streaks, arranged somewhat in pairs, of lustrous pale-yellow colour; the anterior two unite, and are then produced into a pale-violet

lustrous streak. Near the anal angle, on the dorsal margin, is a pale mark, and in the region of the ocelloid patch are a few lustrous blue scales. Apical scales dark amber, in some lights scarcely discernible from the wing. Cilia mottled brown, paler. Posterior wings grey at the base, softening into fuscous at the margins, darkest at the apex. Marginal scales fuscous brown, with pale bases. Cilia iron-grey, with pale-grey bases. Abdomen purplish brown.

Not uncommon; slightly *smaller* than *E. compositella*, but in appearance *resembling* *E. Weirana*.

The imago appears in June, and occurs at Darenth Wood, and other places within the Metropolitan district; also at the New Forest.

2. *Weirana*, Douglas. Alis anticis fusco-nigris; ante medium fascia angulata obscura subplumbea, punctis tribus costalibus geminatis albidis; posticis fuscis obscuris. ♂ Exp. al. 5 lin.

Head and face dull smoky-brown, the latter merging into white below. Eyes black. Palpi as long as the head, whitish. Antennæ fuscous. Thorax and patagia dull brown, with a slight ferruginous tinge. Anterior wings dull smoky-brown, with a faint indication of an angulated fascia before the middle. On the costa, before the centre, is a whitish oblique gemination; beyond, are two others, more distinct. Apical scales umbreous, with paler bases. Cilia paler. Posterior wings fuscous, with an umbreous tinge. Marginal scales and cilia of the same colour, but paler, and the bases of the former paler still. Abdomen umbreous, the caudal tuft pale. ♀ Exp. al. 5 lin. Anterior wings of richer colour than in the ♂; the cilia of the posterior wings whitish.

An uncommon species; allied to *E. nitidana*, but is *larger*, of *paler colour*, and *not so glossy*. First recorded by Mr. J. W. Douglas, who captured it in June, flying in the sunshine at Mickleham, among Beeches. It has since been taken by Mr. F. Bond at Horndean, Hants.

3. *Heegerana*?, Dup. Alis anticis griseis; basi lineis transversis angulatis nigris; pone medium fascia angulata, apice altera abbreviata brunneis; macula ocellari magna, lineis longitudinalibus atris; posticis basi albidis, margine brunneis. ♂ Exp. al. 5 lin.

Head smoky black. Face cinereous. Eyes large, grey. Palpi smoky black. Antennæ long, stout, black. Thorax and patagia smoky black. Anterior wings grey, with transverse angulated black lines, and umbreous fasciæ. At the base is a rhomboid, streaky patch formed of black lines. Beyond the middle is a distinct dull umbreous-brown angulated fascia, which attains the anal angle. At the apex is another abbreviated, similar-coloured, fascia. The

ocelloid patch is large, distinct and grey, with enclosed longitudinal black lines. On the costa, before the central fascia, are three geminations, which are produced into strigæ to the dorsal margin; beyond, are two others, also produced, and reaching to the ocelloid patch. Apical scales black, with grey bases. Cilia plumbeous. Posterior wings umbreous, paler at the base. Marginal scales umbreous, with their bases slightly paler. Cilia white. Legs grey. Abdomen smoky umbreous.

Very rare; a single specimen only is known as being captured in Britain, which is in the cabinet of Mr. Edwin Shepherd. It was taken at Whittlesea Mere, about eight years ago, in July, by Mr. Bouchard.

4. *compositella*, Fabr. Alis anticis fuscisve brunneis obscuris; macula dorsali quadrata tristrigata alba; punctis costalibus quatuor geminatis argenteis; posticis *maris* basi margaritaceis, apice fuscis; *fem.* fuscis obscuris. ♂ Exp. al. 4 lin.

Head olive drab. Face silvery white. Eyes smoky black. Palpi as long as the head, dirty white. Antennæ brown. Thorax glossy, olive-brown, or ashy grey. Patagia same colour as the thorax. Anterior wings glossy ashy-grey at the base, merging into rich golden umber at the apex. At the middle of the dorsal margin is a large curved, somewhat quadrate, silvery-white blotch, with three brown streaks running through it; the centre one broadest and most defined. On the costa are four sharply-defined, oblique, geminated silvery-white streaks (in some lights cream-colour); one before the middle, which is longest and most oblique; the other three beyond. The apical spot is large and distinct. The second geminated streak unites, and is produced into a lustrous blue line; lustrous blue scales are also near the apices of the other geminated streaks. The position of the ocelloid patch is marked with a broadish curved streak of pale-violet scales. In certain lights the whole surface of the wing has a faint violet gloss. Apical scales deep umber. Cilia with a lustrous blue gloss, brown at the anal angle, interrupted below the apical spot by a faint streak running through them. Posterior wings silvery white at the base, softening into pale umber, with a lustrous blue tinge at the apex. Marginal scales brown. Cilia pale grey, glossy. Abdomen smoky black, edges of the segments with shining silvery scales. ♀ Exp. al. 4 lin. Posterior wings wholly fuscous, the bases slightly paler.

This beautiful species is tolerably abundant; its dimensions are about the same as those of *E. nitidana*, and it is constant in its colouring. Distinguished from its congeners by the triple streak in the ample clearly-defined dorsal blotch. One variety occurs (the *Tortrix dorsana* of Fab. Haw.), which has but one streak in the dorsal blotch (see 'Wood's Ind. Ent.' pl. 31. fig. 933).

The imago appears from May to August among Oaks, but more frequently in Clover-fields, and is generally distributed throughout the south of England.

5. *internana*, Guen. Alis anticis nitidis brunneis; costa strigis quatuor geminatis, quarum secunda ad angulum analem attingit; striga geminata pone medium marginis dorsalis; posticis *maris* basi margaritaceis, apice nigris aut fuscis; *fem.* fuscis. ♂ Exp. al. $4\frac{1}{2}$ –5 lin.

Head dull, dark fuscous, paler in front. Face fuscous above, greyish below. Eyes dull dark brown. Palpi fuscous at the apex, pale drab at the base. Antennæ dark fuscous, paler and glossy. Thorax and patagia cinereous, the latter glossy and paler at the apex. Anterior wings glossy, pale umber, softening off into dusky olive-drab at the base. On the costa, before the middle, is a widely geminated white metallic lustrous streak; at the middle is a narrower one, produced obliquely to the middle of the wing; bright and of a slightly violet lustrous tinge; beyond are two more geminated streaks, like the first in character and colour. The apical spot distinct, with a pale lustrous mark below. On the dorsal margin, beyond the middle, is a curved whitish blotch of a pale violet tinge, produced half across the disk, directed towards the apex, and divided by a streak running through. At the anal angle is a broad, pale-violet, bright-lustrous streak, dilating towards the apex, and *meeting, but not joining to*, the produced streak from the costa. Apical scales umber, interrupted beneath the apical spot. Cilia glossy, dark fuscous, paler at the anal angle. Posterior wings pearly white, softening narrowly into fuscous at the apex and apical margin. Marginal scales white, at the apex fuscous. Cilia white. Abdomen dark fuscous. ♀ Exp. al. $4\frac{1}{2}$ –5 lin. Anterior wings as in the ♂. Posterior wings deep fuscous, paler at the base. Marginal scales deep fuscous, their bases whitish. Cilia white.

A somewhat local species; resembling *E. compositella* in appearance, but much larger, and the *dorsal blotch much attenuated, with only one streak down the centre.*

The imago appears at the end of May among furze-bushes, and is abundant in Epping Forest, flying in company with *Grapholita Ulicetana*.

6. *perlepidana*, Haw. Alis anticis nitidis fulvescentibus, margine dorsali fuscis; macula dorsali curva geminata, punctisque costalibus subargenteis; posticis *maris* basi margaritaceis, apice fuscis. ♂ Exp. al. $5\frac{1}{2}$ –6 lin.

Head dusky smoky-brown. Face slightly paler. Eyes black. Palpi as long as the head, dusky brown. Antennæ glossy fuscous, paler beneath. Thorax smoky brown, dull. Patagia glossy, dull

brown at the base; dull drab at the apex. Anterior wings glossy, pale golden brown, merging into rich chocolate on the dorsal margin, where is a very broad, curved, produced and obliquely-directed white streak, having a brown line dividing it along the middle. The costa is marked throughout with produced geminated streaks of a lustrous white colour, and chocolate interspaces: the posterior portion of each gemination produced into metallic-lustred lines, all directed towards the apical margin; the apical spot more or less surrounded anteriorly by the last of these. At the anal angle are two bright silvery-lustred streaks, diverging in their course; the space between them ochreous, and marked with longitudinal black lines. Apical scales umber, interrupted below the apical spot by a white streak running through them and the cilia. Cilia glossy drab, paler at the apex and at the anal angle. Posterior wings at base pearly white, merging into pale fuscous at the apex and margin. Marginal scales pale fuscous, with straw-coloured bases. Cilia white, glossy. Abdomen glossy umber; the apex grey. ♀ Exp. al. $5\frac{1}{2}$ –6 lin.

An uncommon species, but tolerably constant in size and colour. Larger than *S. internana*, and further *distinguishable from it by the dark, rounded patch on the dorsal margin, beyond the crescent-shaped streak*. It is nearer allied to the following species (*S. Leplastriana*), but is *smaller, and has not the costal half of the anterior wings ochreous*.

The imago appears in May and June, in grassy places in Woods. It occurs at Darenth and Birch Woods, Wimbledon Common, in Gloucestershire, Cheshire, and in the north of England, but more frequently in Scotland. It has also been taken at Raheny, county Dublin, in Ireland.

According to Tischer, the larva feeds on *Orobus niger* (the Black Bitter Vetch); he states that plant to be its especial food.

7. **Leplastriana**, Curt. Alis anticis ad costam læte ochraceis, ad dorsum albidis, strigis obliquis numerosis fuscis; striga dorsali curva punctisque costalibus albis; macula ocellari angulo anali ochrea, lineolis tribus longitudinalibus atris; posticis fuscis. ♂ Exp. al. 6– $6\frac{1}{2}$ lin.

Head dusky drab, paler behind. Face darker than the head, in some aspects shining, with a coppery lustre. Eyes black. Palpi as long as the head, white, with the apex fuscous; the apical joint umber. Antennæ fuscous. Thorax mottled, dusky drab. Patagia paler and glossy. Anterior wings slightly glossy. The ground-colour of the costal half of the wing is ochreous, of the dorsal half drab; the costa is obliquely streaked throughout, the interspaces umber; the streaks just before the middle, and beyond, are white.

assuming the geminated form, which are produced into lustrous blue lines, edged with dusky, and directed to a point on the apical margin below the apical spot. On the dorsal margin are four produced geminated streaks of the drab ground-colour in an umber-cloud, followed by two others, much longer, curved, and pointing to the apex: *these form the dorsal blotch*; beyond these curved streaks is a roundish umber patch, which is succeeded by the ocelloid mark: this latter is ochreous, with three longitudinal black lines, edged anteriorly and posteriorly with lustrous copper colour. Apical scales umber, with the bases ochreous. Cilia glossy, brown, with ochreous bases. Posterior wings and marginal scales fuscous, the latter with the bases pale. Cilia drab. Abdomen fuscous, the apex drab. ♀ Exp. al. 6-6½ lin. Anterior wings more distinctly marked than in the ♂.

Local and rather uncommon. Taken on the coast of Kent, at Dover and Deal. It was first introduced into our lists by Mr. John Curtis, who captured it in July, and states, that it was always concealed amongst the Sea Cabbage (*Brassica oleracea*), Curt. 'Brit. Ent.' folio, 352. *It much resembles S. perlepidana, but is larger, and distinguished by the ochreous costal half of the anterior wings.*

8. *interruptana*, H. Schœf. Alis anticis brunneis obscuris fuliginosis; strigulis geminatis costalibus albidis, medio marginis dorsalis macula dentiformi alba; macula ocellari ad angulum analem lineis longitudinalibus atris; posticis brunneis obscuris, basi dilutioribus. Exp. al. 6½ lin.

Head and face dull smoky black. Eyes black. Palpi as long as the head; above and between dusky drab; at the sides and beneath smoky black. Antennæ dark brown. Thorax and patagia smoky brown. Anterior wings dull dark smoky-brown, slightly glossy at the base, with pale geminations on the costa, and a white curved tooth-shaped mark on the dorsal margin. Before the middle of the costa are two whitish geminations slightly produced; beyond are four others, of which the first and last are whitest, largest, and most defined. The former is produced into a dull violet-lusted angulated streak, passing within the ocelloid patch and reaching the anal angle; the second and third geminations are slightly produced, the latter obliquely to the apical margin, where it becomes white. Apical spot distinct. The ocelloid patch and apical portion of the wing with the scales tipped with dull yellow, with four or five longitudinal black lines; the tooth-like dorsal mark with a black spot on the margin. Apical scales black. Cilia glossy, dull violet-brown. Posterior wings umbreous, paler at the base. Marginal scales umbreous, the bases narrowly drab. Cilia dull straw-colour. Abdomen dull, dark smoky brown. Legs drab, speckled with umbreous.

A single specimen of this insect is in the cabinet of Mr. H. Doubleday, which was captured several years ago in Devonshire, in June. No other British example is known. On the Continent this species is captured among Fir-trees. In size and general appearance it resembles *S. dorsana*, but is *darker in colour*; *the dorsal blotch is tooth-shaped, with a mark therein*, instead of quadrant-shaped and immaculate, as in the latter species.

9. *dorsana*, Fabr. Alis anticis nitidis olivaceo-brunneis; striga longa curva dorsali; strigulis quinque geminatis costalibus albis; posticis basi margaritaceo-albis, postica apiceque fuscis. ♂ Exp. al. 7 lin.

Head in front drab, behind olive-brown. Face drab. Eyes black. Palpi as long as the head, white. Antennæ dark fuscous. Thorax and patagia glossy olive-brown. Anterior wings very glossy, rich olive-brown, with five silvery-white geminations on the costa, and a clear similar-coloured quadrant-shaped blotch on the dorsal margin: the former are situated, one before, and four beyond the middle; the latter originates beyond the middle of the dorsal margin, and curves posteriorly; its apex truncate. The geminations beyond the middle of the costa are produced into lustrous blue curved streaks. At the anal angle is an obscure ocelloid patch, bounded by two broad, lustrous, pale violet-coloured streaks, and marked longitudinally with three or four black lines. Apical scales and cilia olive-brown. Posterior wings glossy, the base pearly white; the margins merging into umbrinous fuscous, darkest exteriorly. Marginal scales fuscous, with the bases whitish. Cilia whitish. Legs fuscous. Abdomen glossy olive-brown; the apex drab. ♀ Exp. al. 8 lin. Anterior wings like the ♂; posterior wings not so widely pearly white.

A very rare species, not variable, and in but few cabinets. It occurs in Scotland and in the north of England. In size the same as *S. interruptana*, but readily distinguished from it by the immaculate quadrant-shaped dorsal blotch, and by the pearly lustre of the base of the posterior wings.

Genus VIII. ASTHENIA, HÜBNER?

Antennæ stout in the ♂, much slighter in the ♀. Palpi as long as the head, remote, rather sparingly clothed with scales. Basal joint pyriform, curved, ascending, truncate; apical obovate, as long as the basal; middle ascending, isometric, curved, not stouter than the basal, and twice the length of the apical; maxillæ not so long as the palpi. Thorax robust, ovate. Anterior wings: length more than twice the width. The costa slightly and regularly arcuated.

Apex obtuse ; the apical and dorsal margins rounded. The discoidal cell lies towards the middle of the wing, and extends scarcely two-thirds its length. The costal vein reaches the margin before the middle ; subcostal nervures not equidistant. Posterior wings ample ; apical margin very slightly concave ; dorsal margin entire ; the median vein furcates before the apex, midway between the central median nervure. Abdomen stout in both sexes, tufted in the ♂, suddenly acute in the ♀.

The insects comprehended under this generic name are of moderate size, and all are supposed to be Fir-tree feeders in the larva state. The anterior wings of the imago are chiefly of dark, sombre colours, embellished with silvery streaks and markings. The larva of only one of the species (*A. Strobilella*) is known.

This group consists of five British species : their order of sequence is as below :—

- | | |
|---|-------------|
| A. Anterior wings with a narrow <i>sharply-defined</i> silvery-white, abbreviated streak on the dorsal margin | Species 1-2 |
| B. Anterior wings with an <i>obscure dilating silvery fascia</i> before the middle | Species 3-4 |
| C. Anterior wings with a <i>distinct pale fascia</i> before the middle, and the posterior wings <i>pale at the base</i> . | Species . 5 |

1. **coniferana**, Ratz. Alis anticis nigris ; strigis geminatis costalibus, altera producta dorsali, argenteis ; ad angulum analem macula ocellari subochracea, tribus lineolis atris ; posticis fuscis obscuris. ♂ Exp. al. $5\frac{1}{2}$ -6 lin.

Head and face dark smoky-brown, the latter merging into dark drab below. Eyes black. Palpi as long as the head ; dusky drab, somewhat paler beneath. Antennæ dull dark brown. Thorax and patagia smoky umber, dull, the latter slightly glossy at the apex. Anterior wings dull umber, with four cream-coloured (in some light silvery) streaks ; of these the apical one is geminated, but some of the others are usually simple ; the second and apical streaks are produced into slightly lustrous pale violet-coloured oblique lines, the latter attaining the margin below the apex, where it merges into a white streak ; the first streak is obliquely and faintly produced to the middle of the disk, then forming an angle, and afterwards meeting a white blotch, more or less distinct in different specimens, which sometimes has a brown streak running through it. The ocelloid patch consists of one small lustrous mark at the anal angle and two others above, broad, elongated, and lustrous, of a pale blue, sometimes pale violet-colour ; the space enclosed is marked with longitudinal black lines, with ochreous interspaces. The disk finely irrorated with ochreous or grey scales. Apical scales black, speckled with ochreous. Cilia glossy, dark brown. Posterior wings and marginal scales dark

purplish brown, inclining to umber, the latter with paler bases. Cilia glossy, dark grey. Abdomen umber. ♀ Exp. al. 6-7 lin.

Not uncommon in June and July among Scotch Fir-trees in the north of England and in Scotland, occurring occasionally in the south. It has been captured at Chat Moss, near Manchester, at West Wickham Wood, and at Mickleham. In appearance it resembles *A. cosmophorana*, but is larger and darker coloured.

2. *cosmophorana*, Treits. Alis anticis nitidis cinereo-brunneis, strigis duabus lineolisque argenteis; macula ocellari ad angulum analem punctis atris; posticis fusco-cinereis. ♂ Exp. al. $4\frac{1}{2}$ -5 lin.

Head and face dusky olive-brown, the latter paler below. Eyes black. Palpi scarcely so long as the head; above grey, at the sides and beneath fuscous. Antennæ dark fuscous, inclining to umber. Thorax and patagia umbreous. Anterior wings glossy, rich golden brown, inclining to umber, with a greyish tinge at the base, and light silvery-lustred streaks. Before the middle is a conspicuous silvery streak, most defined on the costa, convex, undulate, and attaining the dorsal margin. Beyond the middle, on the costa, are four other silvery marks, the first and second uniting, and afterwards produced to, and joining with, the lustrous silvery anterior edge of the ocelloid patch; the third is produced in like manner, but joining to the posterior edge of the said patch; the fourth encloses the apical spot, and is continued through the apical scales and cilia. In the ocelloid patch are three or four irregular longitudinal jet-black lines. The silvery streaks are whitish on the costa, and assume a bluish tinge as they approach the dorsal margin. Apical scales deep umber, becoming pale at the anal angle. Cilia glossy, drab, with a slight violet tinge. Posterior wings and marginal scales fuscous, the latter with the bases drab. Cilia glossy, dirty white. Abdomen glossy, umbreous, the apex silvery grey. ♀ Exp. al. $5\frac{1}{2}$ -6 lin.

A rare species, and seemingly confined to Scotland, where it is taken in the Black Forest, in Perthshire, flying round young Pines. It very closely resembles *A. coniferana*, but is considerably smaller, and the ground-colour of the anterior wings is paler.

3. *Strobilella*, Linn. Alis anticis atris, squamis ochraceis irroratis pone medium præcipue; strigis flexuosis, ad costam geminatis argenteis; posticis brunneo-ustulatis; ciliis albis. ♂ Exp. al. $4\frac{1}{2}$ -6 lin.

Head dull, obscure olive-brown. Face slightly paler. Eyes black.

Palpi longer than the head, smoky black above and at the sides, paler beneath. Antennæ black. Thorax and patagia shining, olive-brown, the latter rather paler. Anterior wings shining, brown, with a golden lustre, and marked with silvery streaks. The basal portion olive-brown, the remainder thickly irrorated with ochreous or orange-coloured scales. Before the middle of the costa are two bright silvery streaks, which are produced across the wing, angulated, and somewhat diverging, before attaining the dorsal margin. At the middle and beyond, the costa is black, and marked with six or seven silvery streaks, white at their origin, and more or less produced across the disk, where they assume a pale bluish colour; the innermost, central, and subapical of these streaks are those which are usually produced, sometimes continuously, at others interruptedly, towards the anal angle. At the middle there is sometimes a slight indication of a dark central fascia. Apical scales black, twice interrupted by ochreous patches; one below the apex, the other before the anal angle. Cilia shining, iron-grey, in some aspects with a violet tinge. Posterior wings and marginal scales rich purplish brown, the latter with paler bases. Cilia white. Abdomen dark brown, the caudal tuft dull drab. ♀ Exp. al. 6-6½ lin.

A common species; varies in size, but tolerably constant in colour. It is allied to *A. cosmophorana*, but distinguished from it by having the *central streaks uninterrupted, and less brilliant*. It still more closely resembles *A. splendidulana*, but is larger, its general colour paler, and the lustrous markings not so wide and diffused.

The imago appears in May, flying about Spruce Firs near Croydon, West Wickham, and other places in the Metropolitan district.

The pupa is 3 lines long, and shining. This state lasts about three weeks. The puparium is pale amber-colour.

The larva when full-grown is about 5 lines long, of pale yellow-colour, and slightly shining. The head pale hazel-brown, with the sutural marks black; the shield very transparent and horny, with two pale spots on the posterior margin; anal segment same colour as the head; spiracles brown. It apparently feeds on the seeds of the Fir-cones, living through the winter, and assumes the pupa state in April, in the central or woody portion. Mr. Edwin Shepherd appears the first to have observed the larva in this country, and he gives an interesting account of the insect in the 'Zoologist' for 1850, p. 2748.

4. **splendidulana**, Guen. Alis anticis nitidis, cinereo-fuscis aut brunneis, squamis cinereo-ochraceis irroratis; strigis flexuosis strigulisque ad costam argenteis; posticis basi margaritaceis, margine fuscis. ♂ Exp. al. $4\frac{1}{2}$ –5 lin.

Head black, the tips of the scales white. Face same colour as the head, grey scales round the eyes. Eyes black. Palpi smoky black, paler at the base and beneath, scales tipped with white. Antennæ deep fuscous. Thorax and patagia dark olive-brown, irrorated with dusky drab scales, the latter paler. Anterior wings dark umber, with a golden lustre towards the apex, and dull silvery markings. At the base is a dark rhomboid patch, extending one-third the length of the costa, and nearly to the middle of the dorsal margin; the posterior portion of this patch, and the remainder of the wing, irrorated with ochreous drab scales. Before the middle of the costa are two dull silvery streaks, which are produced to the dorsal margin, where they enclose a pale space forming a dorsal blotch; beyond the middle are four other similar streaks; the basal and apical ones are produced to the anal angle, the former encountering a black spot in the middle of its course; there are besides two or three smaller black spots towards the anal angle. Apical scales black, with white tips, especially at the anal angle. Cilia shining, olive-drab. Posterior wings pale grey at the base, merging into fuscous brown at the margins. Marginal scales fuscous, with the bases pale. Cilia pale grey. Abdomen dark brown. ♀ Exp. al. 4– $5\frac{1}{2}$ lin. In colour somewhat brighter than the ♂; base of the posterior wings much paler.

Of more common occurrence than *A. Strobilella*, and very variable, both in size and the intensity of its colours, the ground-colour ranging from drab to umbreous. In general appearance it resembles both *A. Strobilella* and *A. cosmophorana*, but is distinguished from both by its straight costa, and by the silvery markings being neither so bright nor so sharply defined as in the latter species; it is also smaller in size.

The imago appears in April, May, and June, among Fir-trees. It occurs throughout the Metropolitan district, near Dover, in Cheshire, in Norfolk, and sparingly in the vicinity of Edinburgh.

5. **pygmæana**, Hüb. Alis anticis griseis, nitido-argenteis; fascia basi indistincta, altera medio brunneis; macula ocellari argentea, lineolis tribus longitudinalibus atris; posticis basi margaritaceis, apice fuscis. ♂ Exp. al. $5\frac{1}{2}$ –6 lin.

Head dusky drab. Face dusky drab. Eyes grey. Palpi as long as the head, pale drab, with the apices inclining to tawny. Antennæ fuscous. Thorax and patagia pale drab, mixed with ferruginous scales. Anterior wings glossy, pale drab, with a silvery lustre, and rich ferruginous brown markings. Near the base, commencing on

the costa, is an abbreviated, oblique, ill-defined fascia, followed at the middle by another slender defined one, which attains the anal angle; its anterior edge moderately undulate, dilating towards the dorsal margin, and angulated on its posterior border beyond the middle. In the apical region is a cloud bearing at the anal angle the ocelloid patch, which is conspicuous, of moderate size, bordered with silvery lines, enclosing three longitudinal black lines. On the costa, before the middle, are two, and beyond, five, geminated pale lustrous streaks, all produced, with the interspaces umbreous. The apical spot distinct. Apical scales umbreous, palest at the anal angle, with drab bases. Cilia glossy, pale umbreous, with the bases broadly drab. Posterior wings glossy, the base with a pearly lustre, softening into fuscous at the apex, the margin also narrowly fuscous. Marginal scales fuscous, with whitish bases. Cilia pearly white at the base, and with a fuscous tinge at and towards the apex. Legs very pale fuscous. Abdomen pale fuscous at the base, silvery towards the apex, the caudal tuft pale ochreous.

Exceedingly rare in cabinets. Distinguished from its congeners by the *pearly-white base of the posterior wings*.

According to Haworth, the imago appears in April among Fir-trees, but he quotes no locality. There are two specimens from his collection in the cabinet of the Entomological Society of London, from which the above description is taken.

On the Continent, it is said the larva feeds on the leaves of Pines, and is to be found in July; it is yellowish green, with the head and shield black.

Genus IX. **RETINIA**, GUENÉE.

Palpi longer than the head, approximate, densely clothed with scales; basal joint stout, pyriform, truncate; apical slender, obovate, not so long as the basal; middle stout, ascending, thickest beyond the centre, rather more than three times as long as the apical. Maxillæ as long as the palpi. Thorax slender, ovate, trigonate behind. Anterior wings: length more than twice the width; costa regularly arcuated; apex obtuse; apical and dorsal margins entire; the costal vein attains the margin at the middle; subcostal nervures equidistant. The discoidal cell is situated in the upper half of the wing, and extends nearly two-thirds its length. Posterior wings ample; apex obtuse; apical margin concave; basal angle produced. Abdomen long, slender, and tufted in the ♂; stout and suddenly acute at the apex in the ♀.

All the insects associated in this genus are Pine-feeders in the larva state; the imago attains to large dimensions, and, like the species in the preceding group, have the silvery lustre upon the

anterior wings more or less predominant ; their colours, however, are far from sombre, being red, orange, ochreous, &c. ; but the markings are less defined in character. As a whole, these insects are far from uncommon ; and, owing to the very recent discovery of the larva of some of the rarer species, this genus is now tolerably well represented in collections.

The British species amount to eight in number, and are arranged in the following table :—

- A. Anterior wings *without a buff-coloured cloud* at the apex.
- | | |
|---|-------------|
| a. Spotted and clouded <i>with orange or red</i> . . . | Species 1-2 |
| b. Spotted and clouded <i>with ochreous brown</i> . . . | Species . 3 |
| c. Spotted and clouded <i>with umbreous</i> . . . | Species . 4 |
| d. Streaked <i>with black</i> | Species . 8 |
- B. Anterior wings *with a buff cloud* at the apex . . Species 5-7

1. **Buoliana**, Schiff. *Alis anticis subargenteis, nebulis maculisque rufo-aurantiacis ; posticis fusco-griseis.* ♂ Exp. al. 8-8½ lin.

Head and face pale sulphur-yellow. Eyes black. Palpi longer than the head, reddish orange, pale at the base and between. Antennæ shining, grey above and beneath, brownish towards the base. Thorax pale glossy grey in front and behind, darker on the vertex. Patagia reddish orange at the base, glossy greyish white at the apex. Anterior wings bright orange-red, slightly paler at the base, with silvery streaks and spots. The silvery markings are exceedingly variable, but they consist chiefly of a geminated stripe, constricted in the middle, like a narrow letter X, situated before the middle, and running straight through the wing ; between this and the base is an undefined, interrupted, simple streak, with longitudinal dashes uniting it with the streak beyond. Near the apex is another geminated and constricted streak, more or less regular, but usually well defined. Between the two principal streaks are other irregular marks and spots, and sometimes a streak near the base. In some instances the silvery markings are thickly irrorated with grey, and always assume their *lustrous appearance when viewed directly*, but look *dead-white when seen obliquely*, either to or from the base. Apical scales dense and silvery, tipped with iron-grey. Cilia shining, silvery white. Posterior wings dark grey, clothed with coarse scales. Marginal scales iron-grey, with pale bases. Cilia pale grey. Abdomen grey and shining, the caudal tuft pale pinkish drab. ♀ Exp. al. 8 lin.

Common among young Fir-trees ; varies a little in size, and also a trifle in colour. It is similar to *R. Pinicolana*, but is rather smaller, and the costa is *straighter*, and the red markings on the anterior wings are *neither so defined nor so deeply coloured*.

The imago appears in July and August, but is seldom taken on the wing. It occurs among young Fir-trees round London, Manchester, and other places.

The pupa is 5 lines in length; the head, thorax, and wing-cases, shining chestnut-brown; the abdomen dull, umbreous towards the base, becoming paler at the apex; the anal termination obtuse.

The larva is from 6 to 7 lines long, fleshy, sluggish; of a dirty brown-red colour, with a few short hairs disposed about the body. Head small, black, and shining; the shield black on the vertex, divided by a pale dorsal line, and at the sides reddish brown. The body without markings, except on the anal segment, which bears a transverse row of darkish spots; the underside paler; apical joints of legs black; pro-legs rudimentary; the anal pair slightly larger. It feeds in the young shoots of the Scotch Fir, and its presence is detected by the distorted appearance the attacked shoots assume. It should be sought for about the end of April.

2. *Pinicolana*, Doub. Alis anticis subargenteis; maculis rubris, costa punctis geminatis productis; posticis griseis. ♂ Exp. al. 9-10 lin.

Head and face dull sulphur-colour, with a reddish tinge. Eyes black. Palpi longer than the head, dull sulphur-coloured above and between, red at the sides and beneath. Antennæ grey, alternated with brown. Thorax pale madder red, paler behind. Patagia deeper coloured at the base, cream-colour at the apex. Anterior wings madder red, with a pale orange cloud along the dorsal margin, and sometimes with another broad, similar-coloured cloud before the middle. On the costa are usually six silvery marks, of which the two basal ones are produced, and reach the dorsal margin, uniting beyond the middle of their course. The fourth and fifth, and sometimes the third, fourth, and fifth, unite beyond the middle of the wing, afterwards forming a broad arch resting on the dorsal margin; the anterior portion of this arch is sometimes furcated; the posterior part, shortly above the dorsal margin, gives out a bright streak, sometimes interrupted, but usually meeting the apical costal mark. Apical margin sometimes entire, at others wavy; in the latter case owing to the presence of small silvery maculations. Apical scales with iron-grey tips and silvery bases. Cilia iron-grey, with pale grey bases. Posterior wings clothed with coarse scales, pale grey at the base, and darkening somewhat towards the apex; the apex and margin with a reddish tinge, especially the former. Marginal scales grey, with whitish bases. Cilia dirty white. Abdomen pale, shining

grey, with a reddish tinge, the caudal tuft reddish luteous. ♀ Exp. al. 10–11 lin. Somewhat brighter in colour than the ♂.

Equally common with the preceding, but it does not appear to be known on the Continent. It resembles *R. Buoliana*, but is *rather larger, and more deeply coloured; the markings also are more distinct, and the costa more rounded.*

The imago appears in July and August among Fir-trees; more frequently in young plantations. It occurs round London, and in the south of England; in Norfolk; also near Manchester, and in Yorkshire.

The larva resembles that of *R. Buoliana*, and feeds in the same manner; but we have not met with it.

3. *Pinivorana*, Zell. Alis anticis cinereis, subargenteis strigis maculisque numerosis fusco-ochraceis; posticis fuscis. ♂ Exp. al. 7–9 lin.

Head olive-drab on the vertex, inclining to dull ferrugineous above the eyes. Face darker than the head. Eyes black. Palpi as long as the head, dusky drab above and at the sides, paler beneath and between. Antennæ dusky ochreous brown. Thorax pale olive-brown, a few iron-grey and drab scales behind. Patagia: at the base dusky ochreous brown, the tips broadly drab and iron-grey. Anterior wings dusky ochreous brown, with dirty white streaks, sometimes mottled and irrorated with dark grey scales. Near the base is a direct whitish streak, followed by several others irregular and wavy, before the middle; beyond the middle, are two streaks more or less regular in their course, passing from the costa to the anal angle; these are succeeded by another at the apex. Apical scales dusky ochreous, mottled with white and brown. Cilia dusky drab. Posterior wings and marginal scales pale fuscous, with paler bases. Cilia shining, pale drab. Abdomen and caudal tuft pale fuscous grey. ♀ Exp. al. 9–10 lin. The ground-colour of the anterior wings darker, and the streaks whiter and more numerous than in the ♂; the irroration more decided, and sometimes thickly freckled with blackish scales in patches along the folds.

A rather uncommon species, and very variable in the markings on the anterior wings, and also in size. Is like *R. Resinella* in general appearance; but the *markings of this latter species are umbreous, not dusky ochreous.*

The imago appears in June and July among Fir-trees. It occurs in Kensington Gardens, near Croydon, Birch Wood, near Ripley, and other places round London; near Dover, in Gloucestershire, Lancashire, &c.; also in Scotland and at Holywood, County Down, in Ireland.

4. **Resinella**, Linn. Alis anticis brunneis obscuris, strigis subargenteis; costa lineolis geminatis ad marginem dorsalem productis; apice puncto rotundo; posticis aureo-brunneis. ♂ Exp. al. 9-10 lin.

Head dull umber. Face above dull umber, below pale ochreous. Eyes black. Palpi as long as the head; above umbreous, beneath dull ochreous. Antennæ fuscous. Thorax umbreous, mixed with grey scales. Patagia of the same colour as the thorax, but with more grey scales. Anterior wings dull, rich umber, with silvery-lustrous streaks and markings; at the base are several undulated streaks proceeding from the costa to the dorsal margin; on the costa beyond these, but before the middle, are two geminations, which are produced and dilated irregularly to the dorsal margin; beyond the middle are four other geminations; these unite two and two, and afterwards are produced to the opposite margin. The apical spot distinct. Apical scales umbreous, interrupted by silvery patches. Cilia glossy, iron-grey. Posterior wings with a subdued gloss, golden umbreous brown. Marginal scales golden umbreous brown. Cilia glossy, whitish. Abdomen glossy, dark iron-grey; the apex ochreous. ♀ Exp. al. 10-11 lin.

A Scotch species; allied to *R. Pinivorana*, which it much resembles, but has the *anterior wings broader, and the markings umbreous instead of dusky ochreous brown*; also variable in size and colour.

The imago appears in June among Fir-trees, in Perthshire, and has been bred freely by Mr. Bouchard.

The larva feeds within a hollow resinous exudation from the branches of Pine-trees, occasioned by the wound in the bark made by the young larva feeding therein.

5. **sylvestrana**, Curt. Alis anticis cinereis subargenteis, strigis rectis fuscis, apice subochraceis; posticis pallide fuscis. ♂ Exp. al. 5-5½ lin.

Head hoary grey on the vertex, palest in front, slightly ochreous over the eyes. Face hoary grey. Eyes black. Palpi as long as the head, grey above and between, smoky black at the sides and beneath. Antennæ deep fuscous. Thorax and patagia fuscous, mixed with grey scales, the latter thickly so at the apex. Anterior wings with lustrous, leaden streaks on a pale umber-ground, and a large patch at the apex, of a coppery ochreous colour. At the base is a truncate patch of darkish umber, marked with transverse wavy streaks; it extends nearly one-third along the costa, and fully that distance along the dorsal margin; its posterior edge being nearly straight. The middle portion of the wing is paler umber, and marked on the costa with four leaden, lustrous, geminated streaks, of

which the two nearest the base are produced, and attain the dorsal margin, where they suffuse and become brighter, approaching a silvery lustre: the other two are also much produced, but do not reach the dorsal margin; the apical portion is of an ochreous copper-colour and lustre, and bounded on its anterior border by a thick silvery streak from the dorsal margin, which meets the first of the three produced geminated costal streaks; at the anal angle is another thick silvery streak, but short. Apical scales smoky black, softening into broad, drab bases. Cilia speckled with grey. Posterior wings pale fuscous. Marginal scales pale fuscous, with yellowish bases. Cilia pale fuscous grey. Abdomen grey, shining; the caudal tuft drab. ♀ Exp. al. 7 lin. The basal patch upon the anterior wings not so distinct as in the ♂, but the colours generally brighter.

Till very recently this species was rare in cabinets. It varies in size and somewhat in colour. It much resembles *R. duplana*, but is smaller.

The imago appears in June and July among *Pinus sylvestris*. It was first discovered by Mr. Curtis and Mr. Dale at Bournemouth in Hampshire, and has since been bred freely by Messrs. Wm. Machin and F. O. Standish from the young shoots of that tree, or of *Pinus pinea*.

The larva is sluggish, and fleshy, of a turbid brown colour, inclining to red; the head jet-black, small, shining, heart-shaped; the shield chestnut-brown, divided by a dorsal line; the spots slightly elevated, shining, and concolorous with the body.

6. *duplana*, Hüb. Alis anticis nitidis, basi pone medium cinereis, apice fusco-ochraceis; fasciis duabus pallidis fusco-strigatis; posticis basi margaritaceis, apice fusco-fuliginosis. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head and face ochreous. Eyes black. Palpi as long as the head, ochreous. Antennæ slender, dark brown. Thorax and patagia dull ochreous. Anterior wings glossy; the basal portion of the wing cinereous, with fuscous markings; the apex fuscous ochre. At one-third from the base is a pale fascia, streaked transversely with fuscous, followed by another beyond the middle; the interstices also streaked, and slightly silvery. The costa beyond the second fascia spotted with umber. Apical scales umber. Cilia umbreous, with drab bases. Posterior wings pearly white at the base, merging into dusky fuscous. Marginal scales same colour, with the bases drab. Cilia drab. Abdomen black; the posterior edges of the segments fringed with silvery-white scales. ♀ Exp. al. 7 lin.

A Scotch species, and only within the last two or three years added to the British list. It is rare in cabinets. Captured among Fir-trees. It very much resembles *R. sylvestrana*, but is

larger, and further distinguished by the broader fuscous-ochre apex of the wing, which in the latter species approaches copper-colour.

7. *Turionella*, Linn. Alis anticis cinereis, strigis strigulisque fuscis ochraceis; ad apicem late ochraceis; costa margineque apicali punctis nigris; posticis basi albis, apice fuscis. ♀ Exp. al. 9-9½ lin.

Head and face pale ferruginous, the latter slightly paler below. Eyes black. Palpi as long as the head, dull drab above and between, inclining to ferruginous at the sides and beneath. Antennæ fuscous, with a slight ferruginous tinge towards the base above. Thorax and patagia broadly pale ferruginous in front, behind with deep fuscous scales tipped with pale grey. Anterior wings: dull ochreous brown at the base, merging into pale ferruginous or dull ochreous at the apex, with numerous freckles and minute markings composed of coarse black and white scales, thus imparting to the surface a leaden-grey colour; the markings are arranged in wavy streaks from the costa to the dorsal margin, and occupy nearly the whole surface to beyond the middle, where there is a faint indication of an oblique, brown fascia, beyond which the apical region, which has a coppery lustre when viewed obliquely, and is only sparingly marked with leaden-grey streaks; beyond the fascia, the costa is blackish, and marked with four geminated streaks, those nearest the base most produced. Apical scales blackish, with white tips. Cilia fuscous grey, with white tips. Posterior wings whitish at the base, softening into a dark cloud at the apex, composed of fuscous and black scales; at the margin is a row of small, round, yellow spots, and the dark colour more or less continued to the anal angle. Marginal scales dusky. Cilia very pale grey. Abdomen pale, shining grey, the caudal tuft drab. ♀ Exp. al. 9½-10 lin. In colour brighter, and the grey streaks less suffused than in the ♂, thus permitting the ground-colour of the wing to be more visible; the fascia beyond the middle also more distinct.

A very rare species in cabinets, and only during the last few years detected in this country. It is of the size of *R. Buoliana*, some specimens attaining those of large specimens of *R. Pinicolana*; in the intensity of its colour and number of streaks it likewise varies. *It is the largest known British species having a buff tip to the anterior wings.*

The imago appears at the end of May and June, among young Scotch Fir-trees. It has been captured at Birch and West Wickham Woods; at Black Park, and a few other places.

The larva feeds in the young shoots of the Scotch Fir, causing them to droop and die, in this respect differing from the habit of

the larva of *R. Buoliana* which only distorts the shoots; it must be sought for early in April.

8. *occultana*, Doug. Alis anticis nitidis griseis; basi macula rhombea; fascia media apiceque nigris subreticulatis; posticis fuscis.
♂ Exp. al. 8-10 lin.

Head smoky black, the scales tipped with grey. Face above coloured like the head, whitish below. Eyes black. Palpi above and at the sides dark grey, beneath the apex dark grey, the base pale drab. Antennæ deep fuscous. Thorax and patagia smoky black, the tips of the scales grey. Anterior wings glossy, pale grey; at the base is a rhomboid patch, extending one-fourth along the costa and one-third along the dorsal margin, of blackish colour, darkest at its posterior edge, and thickly irrorated with grey scales; at the middle of the costa commences a slightly-curved fascia, somewhat angulated and of *nearly* equal width, shortly after its commencement, where it is narrowest; its colour is similar to the basal patch at its costal half, the dorsal portion being mixed with obscure ochreous brown. The apical region reticulated with black, and, with the apical margin, streaked with ochreous brown. The costa is blackish, alternated throughout with geminated grey streaks, which are most distinct towards the apex. Apical spot distinct; the dorsal margin thickly maculated with black, and the paler portions of the wing streaked with dusky. Apical scales black, tipped with grey, with white bases, at the apex and before the anal angle pale grey, the remainder, with the bases, obscure ochreous brown. Cilia glossy, dull fuscous, with whitish tips. Posterior wings dull, dark fuscous, deepest at the apex. Marginal scales darker fuscous. Cilia pale fuscous grey, both with the bases, straw-colour. Abdomen and the caudal tuft shining, smoky black. ♀ Exp. al. 9-11 lin. In colour and markings like the ♂, but without the obscure ochreous colour of the central fascia, apical streaks, and scales, which are in this sex black.

A common insect among Larch- and Fir-trees, and subject to great variation in the intensity of its colouring, the northern specimens being the most distinctly marked.

The imago appears in June and July throughout the Metropolitan district, near Brighton and other places in the south of England. It occurs also in the vicinity of Edinburgh.

Genus X. PAMPLUSIA, GUENÉE.

Palpi longer than the head, ascending, diverging; basal joint curved, short, nearly isometric; apical slender, obovate, nearly twice the length of the basal, directed horizontally; middle ascending,

slightly curved, nearly three times as long as the apical. Maxillæ longer than the palpi. Thorax slender, ovate. Anterior wings: length equals three times the breadth. Costa slightly arcuated; apex acute. Apical margin acutely truncate; dorsal margin straight. The costal vein attains the margin before the middle; the subcostal nervures not equidistant. The discoidal cell narrow, and situated in the upper half of the wing. Posterior wings elongate, apex obtuse; apical margin concave, dorsal margin entire, basal angle slightly produced. Abdomen slender, tufted.

The only species in this genus, as at present known, was formerly included by the late J. F. Stephens among the *Sericoridae*, supposing it to be the *Tortrix subsequana* of Haworth (*Asthenia pygmæana*), to which insect, independent of its not possessing the pale bases to the posterior wings, it bears not the slightest resemblance. M. Guenée has since placed it in a distinct genus, as above. In its habits it appears to approach *Sericoris*, but its long, narrow, almost isometric anterior wings, with their acutely-truncated apex, at once separate it from that group, independent of minor variations in the venation of the wings and in the structure of the palpi.

1. *monticolana*, Mann. Alis anticis rufo-griseis lucidis, basi fascia lata alteraque medio obliquis, apiceque rufis, strigis subargenteis; punctis albidis ad apicem costæ; posticis griseis. ♂ Exp. al. $5\frac{1}{2}$ lin.

Head dusky, ochreous brown. Face above dusky ochreous brown, grey below. Eyes black. Palpi as long as the head, fuscous at the apex, drab at the base and beneath. Antennæ dark grey. Thorax dusky brown, pale. Patagia paler than the thorax, particularly at the apex. Anterior wings glossy, with reddish brown fasciæ and silvery stripes mixed with black streaks. At the base is a reddish-brown or ferruginous patch, extending one-fourth along the costa, and proceeding very obliquely across the wing to the middle of the dorsal margin. At the middle of the wing is a broad, uninterrupted fascia of the same colour, straight on its inner and angulated and constricted at its outer edge towards the dorsal margin; in the apical region is a similarly-coloured patch. The basal patch and central fascia are edged broadly with silvery stripes; there are also one or two longitudinal undefined silvery streaks in the basal patch; in the apical cloud are two or three large silvery spots on the costa (and another within the apical margin); the anterior one sometimes produced into a streak to the dorsal margin. In some specimens there are several longitudinal black or dark brown streaks and spots, especially on the basal patch and central fascia. Apical scales pale ferruginous. Cilia silvery. *Obs.*: the lustrous streaks look of a dead white when viewed from the base, but appear silvery when viewed in the opposite di-

rection. Posterior wings shining grey, with a fuscous tinge at the apex. Marginal scales fuscous. Cilia dirty white. Abdomen shining, fuscous grey, the caudal tuft drab. ♀ Exp. al. 6 lin.

A common species in the north of England. Constant in size, but variable in its colours. In the Stephensian collection, in the British Museum, is a dark suffused variety, which the late J. F. Stephens elevated to the rank of a species, and described it in the 'Mus. Cat.' part x. *Lepidoptera* (continued), p. 100, under the name of *P. alticolana*, but it is evidently nothing more than a variety.

The imago appears in July and August on moors and heathy places, among *Calluna vulgaris*, in Yorkshire, Lancashire, and north of England; also around Edinburgh.

Genus XI. HEUSIMENE, Hüb. ? teste STEPHENS.

Palpi as long as the head, drooping, remote. Basal joint pyriform, widest at its apex; apical joint obovate, not so long as the basal; middle stout, obovate, three times the length of the apical. Maxillæ as long as the palpi. Thorax robust, globose. Anterior wings: length equals three times the breadth. Costa very nearly straight; apex acute; apical margin oblique, rounded; dorsal margin straight; costal vein attains the margin before the middle; the subcostal nervures not equidistant. The discoidal cell lies in the upper half of the wing, and extends two-thirds its length. Posterior wings ample; apex obtuse; apical and dorsal margins entire; basal angle slightly produced. Abdomen stout in both sexes, with a small tuft at the apex in the ♂.

There is only one British species in this genus, which is remarkable for the length and dull, dark, sombre colouring of its anterior wings; and also by the broad dark border to the posterior ones, which are otherwise white. It is peculiar in its habits, flies but seldom, and appears in the early spring.

1. *fimbriana*, Steph. Alis anticis cinereis, fusco brunneoque nebulosis; costa strigulis cinereis geminatis; posticis albidis, ad fimbriam fuscis. ♂ Exp. al. 7 lin.

Head black, with the scales tipped with drab. Face black. Eyes black. Palpi as long as the head, black, speckled with drab; the base beneath dull drab. Antennæ black. Thorax black, speckled with drab. Patagia at the base speckled with drab; the apex pale drab. Anterior wings dull, pale ashy grey, clouded with umber

markings. On the costa are seven or eight oblique pale and whitish geminated streaks, upon a fuscous ground; a distinct umber one *at*, and another *before*, the middle, produced, uniting, and forming in the middle of the wing a dark umber patch, below which, on the dorsal margin, is a pale-coloured curved tooth-shaped blotch, the point directed towards the apex, and having within it an umber streak. The dorsal margin towards the base bears a dark, nearly black, marking, softening into ashy grey at the base. The posterior half of the dorsal portion with irregular spots of dark umber and brown. The ocelloid patch with three golden marks, enclosing some longitudinal black lines, upon an ashy ground. The apical spot dull reddish brown, speckled with black; apical scales umber, with paler bases, sometimes interrupted by a white mark below the apex, and another towards the anal angle. Cilia shining iron-grey. Posterior wings whitish at the base, gradually softening into fuscous-brown at the margins, darkest at the apex. Marginal scales fuscous, with paler bases. Cilia pale fuscous-grey. Abdomen umber; the extreme apex and edges of the segments shining drab. ♀ Exp. al. 7 lin.

Rather an uncommon species; constant in size and colour.

The imago appears in March and April, and sometimes in May, frequenting Oaks, especially those on which the old leaves remain. It occurs throughout England, but nowhere commonly; also in the vicinity of Edinburgh. According to Mr. C. S. Gregson (*vide* 'Entom. Weekly Intelligencer,' vol. i. p. 28), the habit of this insect is to fall, dart, or fly down from the trees when beaten; it, however, very rarely flies, and it requires a sharp eye to detect it while darting or falling.

FAMILY VI. CARPOCAPSIDÆ.

The insects comprised in this family, as in the preceding, *never have the costa obtusely produced towards the base, but always regularly arcuated*. The anterior wings are ample, frequently marked with metallic-lustred streaks, and held in a deflexed position in repose. The posterior wings of sombre colours, always concave or emarginate below the apex.

The larvæ, with few exceptions, are internal feeders; those of the genus *Carpocapsa* living in fruits, the remainder chiefly in growing seeds and roots.

The three genera forming this group are thus arranged :—

- A. Anterior wings with the *costa* very slightly arcuated in both sexes.
- a. Palpi as long as the head.
- b. With the middle joint of the palpi twice as long as the apical 1. ENDOPISA.
- B. Anterior wings with the *costa* sensibly arcuated in both sexes.
- a a. Palpi longer than the head.
- b b. With the middle joint of the palpi twice as long as the apical 2. CARPOCAPSA.
- b b b. With the middle joint of the palpi more than three times as long as the apical 3. GRAPHOLITA.

Genus I. ENDOPISA, GUENÉE.

Palpi as long as the head. Basal joint moderately stout, pyriform, truncate; apical obovate, slender, longer than the basal; middle curved, ascending, as stout as the basal, scarcely stouter beyond the centre, twice as long as the apical. Maxillæ stout, as long as the palpi. Thorax robust, ovate. Anterior wings in length more than twice the width. *Costa* regularly arcuated; apex obtuse; apical margin suddenly concave below the apex, otherwise rounded; dorsal margin slightly rounded. The costal vein reaches the margin at the middle; subcostal nervures not equidistant. The discoidal cell receives a nervure originating between the first and second subcostal nervures, and passing to the apical vein between the first and second apical nervures. Posterior wings ample; apex obtuse; apical margin concave; dorsal margin entire; basal angle slightly produced. Abdomen slender in the ♂, with a tuft at the apex; stout in the ♀, with the apex suddenly acute.

This genus was established by M. Guenée for the reception of the two species (*nigricana* and *proximana*), the larvæ of which feed in Peas (*Pisum sativum*), whilst in a growing state; but it has been augmented in the present arrangement, by the addition of several others, evidently congeneric, which have been hitherto, but improperly (so far as structure is concerned), associated with *Dicrorampha*. As at present constituted, this is a most puzzling group, from the species bearing so close a resemblance to each other, but we think them a very natural one. The larvæ of the added species are unknown, but they are supposed to feed upon unripe growing seeds. That of *E. Germarana* feeds in the hips of the Wild Rose.

The British species are six in number, and their sequence is thus tabulated:—

- A. Anterior wings with *the streaks or geminations* on the costa faintly indicated Species 1–3
 B. Anterior wings with *bright yellow spots, streaks or geminations* on the costa Species 4–6

1. *saturnana*, Guen. ♂ = *saturnana*, Guen.; ♀ = *senectana*, Guen. Alis anticis nitidis, saturate olivaceo-brunneis, squamis ochraceis irroratis; ad costam septem strigis geminatis; margine apicali punctis atris; posticis fusco-griseis. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head and face dusky drab, approaching to brown. Eyes black. Palpi longer than the head, ochreous at the base, dusky brown at the apex. Antennæ fuscous. Thorax and patagia dusky olive-brown. Anterior wings glossy, dusky olive-brown, with a *general* irroration of ochreous scales. On the costa are faint indications of geminations, seven in number. At the apical margin is a row of minute black dots. Apical scales umber. Cilia very glossy, dusky brown, with drab bases. Posterior wings fuscous, with a greenish-grey iridescence. Marginal scales umber, with drab bases. Cilia glossy, fuscous grey. Abdomen fuscous. ♀ Exp. al. 7–7½ lin. Anterior wings darker than those of the ♂, and slightly more acuminate; the geminations on the costa more produced and distinct. Posterior wings also darker.

This is an uncommon species, and was first introduced into the British lists by Mr. H. Doubleday. It is very closely allied to *D. simpliciana*, *plumbagana*, and *Tanaceti*; but distinguished from all by its longer, narrower anterior wings, and the straighter costa; and until now has been associated with them in that genus, but we think its present position more fitting. The non-folded costa, at all events, separates it from the true *Dicrorampha*.

The imago appears in July and August, in grassy places in the south of England. It has occurred at Musselburgh and Aberdeen, in Scotland; also at Brislington in Somersetshire.

2. *Ulicana*, Guen. Alis anticis brunneis obscuris, squamis ochraceis irroratis sparsis; strigis costalibus in lineis curvis cæruleis productis; margine apicali punctis atris; posticis *maris* fuscis margine saturatoribus; *fæm.* brunneis obscuris. ♂ Exp. al. 5–5½ lin.

Head and face smoky brown. Eyes black. Palpi smoky black at the apex, ochreous at the base and between. Antennæ shining, olivaceous brown. Thorax and patagia smoky olivaceous brown, the latter paler. Anterior wings umbreous, sparingly irrorated with ochreous scales, and slightly lustrous pale markings are disposed over the surface. On the costa are five silvery, scarcely-geminated streaks

(in some lights pale golden); these streaks are produced into lustrous blue lines, of which the anterior one is lengthened, and bounds the ocelloid patch at the anal angle. The dorsal blotch is very indistinctly defined, and of a slight leaden lustre. Along the apical margin is a row of black dots. Apical scales shining, deep cinereous. Cilia broadly iron-grey, with the bases pale ochreous. Posterior wings dusky fuscous, deepest towards the margins. Marginal scales smoky black, with drab, or slightly yellow bases. Cilia glossy, whitish. Abdomen fuscous, the caudal tuft drab. ♀ Exp. al. 6-6½ lin. Anterior wings, in colours richer than those of the ♂; the irroration of ochreous scales *more general*, particularly on the apical half; the costal streaks not with so metallic a lustre; the lustrous lines proceeding from them broader, and of a brighter blue; the black spots on the apical margin larger; posterior wings much darker; the whole surface of equal intensity.

Not of very frequent occurrence.

It appears in June, and occurs at Mickleham, Epping Forest, West Wickham, near Guildford, in Gloucestershire, and other places; occasionally in the vicinity of Edinburgh.

3. *Germarana*, Hüb. *Alis anticis atro-purpureis, immaculatis; costa strigis obliquis albis; posticis fuscisve brunneis.* ♂ Exp. al. 5½ lin.

Head glossy, brown, rather paler above and between the eyes. Face brown. Eyes black. Palpi longer than the head, very pale brown above and at the sides, pale drab between and beneath. Antennæ clothed with purplish brown scales. Thorax dull purplish brown. Patagia paler than the thorax, glossy. Anterior wings dark plum-colour (in some lights rich olive-green), most intense at the apex. The costal streaks are scarcely visible before the middle, beyond they are white; the apical and sub-apical ones being simple, the others geminated; the apical spot distinct. No ocelloid patch visible, but within the middle of the apical margin are three or four longitudinal black lines, scarcely discernible from the ground-colour of the wing. Apical scales chocolate-brown, with paler bases. Cilia shining grey. Posterior wings golden brown, darkest at the margin. Marginal scales golden brown, with paler bases. Cilia fuscous grey. Abdomen glossy, purplish brown, the apex drab. ♀ Exp. al. 6 lin. Not so bright in colour as the ♂; the posterior wings darker.

An uncommon species; varying in size, but tolerably constant in colour.

The imago appears at the end of June and beginning of July: occurring at Darenth, Coombe, and Wickham Woods; Sanderstead Downs, and other places round London.

The larva, according to M. Bruand, feeds in the of hips Roses, and is pinkish white in colour.

4. *nigricana*, Fabr. Alis anticis olivaceo-fuliginosis, squamis ochraceis vel cinereis irroratis; costa strigis fuscis albidis cæruleoque obliquis; macula ocellari subplumbea, punctis atris; posticis brunneis ustulatis. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head dusky olive-brown. Face drab. Eyes black. Palpi longer than the head, dark drab at the apex, whitish between, otherwise pale grey. Antennæ dark fuscous. Thorax and patagia glossy, dark olive-drab, the latter paler at the apex. Anterior wings glossy, dusky drab, with an olive tinge, merging into pale umber-brown at the apex, thickly irrorated with ochreous, or ochreous-grey scales. The costa with geminated streaks, two before the middle, dusky, the remainder cream-colour; of these latter, the first and third are produced into lustrous blue lines directed to the apical margin, which the third one attains below the apical spot. The ocelloid patch is distinct, edged anteriorly and posteriorly with lustrous patches of scales, sometimes silvery, at others coppery, and not unfrequently of a pale violet-colour; the space between concolorous with the wing, and marked with black spots. Apical scales umber, with ochreous or grey tips, interrupted (and sometimes also the cilia) below the apex. Cilia very glossy, drab. Posterior wings: in colour ranging from fuscous to umber, palest at the base. Marginal scales of the same colour as the wing, with paler bases. Cilia pale straw-colour at the apex, the remainder white. Abdomen umber, with the edges of the segments grey. ♀ Exp. al. $6\frac{1}{2}$ –7 lin.

Not very plentiful in cabinets; slightly variable in size and in colour. Closely allied to the succeeding species *E. proximana*, which it very much resembles, but is larger, and is further distinguishable by its uniformly darker colour.

The imago appears in June, and is generally distributed throughout the country, but is not met with commonly.

The larva feeds on the growing and unripe seeds of the Pea (*Pisum sativum*), is full grown about the middle of July, and from 5 to $5\frac{1}{2}$ lines long. It is sluggish, fleshy, of a yellowish white colour. The head pale hazel, with the sutures dark brown. The shield luteous, with a number of minute markings towards the base; those nearest the latter are somewhat triangular, but undefined, and pale hazel. The spots are large, oval, and greenish drab. The anal segment with numerous black punctures. The colouring appears to vary in character; in some instances the shield is much more suffused with brown, and the punctures on the anal segment assuming the appearance of a granulated patch. When full grown, it spins a strong cocoon of a parchmenty consistence, formed of a pinkish drab-coloured silk. These larvæ are exceedingly difficult to rear.

5. **proximana**, Haw. Alis anticis pallide olivaceo-fuliginosis; squamis ochraceis vel cinereis irroratis; costa strigis fuscis albidis geminatis obliquis; macula ocellari ad angulum analem punctis atris; posticis subnitidis olivaceo-fuscis. ♂ Exp. al. 6 lin.

Head dusky drab, paler in front. Face dusky drab, paler below. Eyes black. Palpi pale drab. Antennæ glossy, dusky drab. Thorax and patagia dusky drab, the latter glossy. Anterior wings glossy, dusky drab, with a pale olive-green tinge, paler at the base. The costa is marked throughout with cream-coloured, or very pale drab streaks; those beyond the middle most distinct, produced and geminated, with dark fuscous, produced interspaces; the first and third of these geminated streaks are produced into lustrous leaden-coloured lines pointing towards the apical margin, the posterior one attaining it one-fourth below the apex. Towards the anal angle is the ocelloid patch, bounded by slightly coppery, lustrous streaks, with the space between bearing three or four short longitudinal black lines. The whole surface of the wing with an irroration of grey scales. Apical scales fuscous, with grey tips. Cilia glossy, fuscous grey. Posterior wings glossy, fuscous, with a bronzy tinge, paler at the base. Marginal scales fuscous. Cilia straw-colour. Abdomen fuscous grey, the apex drab. ♀ Exp. al. 6 lin.

Like the preceding; not frequently captured in the perfect state. It is very like *E. nigricana* in markings, but considerably *smaller and paler in colour*.

The imago appears in June, and is generally distributed.

The larva, according to M. Guenée, is yellowish white, with the head fuscous, and the ordinary spots blackish. It feeds in the unripe seeds of *Pisum sativum*.

6. **puncticostana**, Steph. Alis anticis atro-purpureis, basi dilutioribus; costa strigulis geminatis obliquis pallide flavis; strigis subcostalibus et ad angulum analem cæruleis; posticis brunneis. ♂ Exp. al. 5-5½ lin.

Head and face dull, smoky olive-brown, the latter ochreous below. Eyes black. Palpi scarcely so long as the head, ochreous. Antennæ umbreous. Thorax and patagia dull, dark olive-brown, inclining to umbreous. Anterior wings glossy, umbreous, with a purple tinge, paler at the base, and the costa clearly and distinctly marked with glossy, oblique yellow markings, disposed in pairs; an umbreous spot at the apex. In fine specimens, lustrous blue streaks are present, below the markings on the costa, and towards the anal angle. Apical scales of the same colour as the wing. Cilia paler. Posterior wings and marginal scales dull, umbreous brown; the latter with the bases paler. Cilia dull, slightly ochreous. Abdomen dull, dark umbreous. ♀ Exp. al. 5½-6 lin.

A rare insect; not variable. Of the size of, and closely allied

to *E. Germarana*, but distinguished from it by its uniformly darker colour, and more distinctly marked costa.

Genus II. CARPOCAPSA, TREIT.

Palpi longer than the head, approximate, ascending; basal joint pyriform, truncate; apical stout, egg-shaped, densely clothed with short scales, as long as the basal; middle moderately stout, thickened beyond the centre, curved, more than twice as long as the apical. Maxillæ as long as the palpi. Thorax globose, stout. Anterior wings: length more than twice the width; costa regularly arcuated; apex obtuse, slightly produced (not produced in *C. pomonella*); apical margin rounded, suddenly concave below the apex; dorsal margin scarcely rounded; the costal vein attains the margin at the middle; subcostal nervures not equidistant. The discoidal cell in the upper half of the wing, and extends two-thirds its length. Posterior wings ample, somewhat acute at the apex; apical margin concave; dorsal margin entire. Abdomen robust in both sexes, but stoutest in the ♀.

Of the entire family of the *Tortricina*, this is, perhaps, the most natural genus. The whole of the European species, as at present known, feed in fruits in their larva state. The ample anterior wings are of dull colours, and mostly characterized by an oblique dark cloud at the anal angle, in which is a large and conspicuous ocelloid patch, usually with metallic markings. The larvæ are stout, sluggish, reddish in colour, are full-fed towards the end of summer; before assuming the pupa state they quit the fruit which gave them nourishment, and seek a convenient spot in which to spin or make a cocoon, and undergo their final change.

There is considerable affinity between this genus and the preceding one; the habits of the larvæ of such of the latter (*Endopisa*) as are known being similar, although there is but very little resemblance in their perfect state.

There are five British species, and one or two others are known upon the Continent.

In nature this is doubtless an extensive group of insects, and very recently another species has been added to it by Mr. J. O. Westwood (*C. saltitans*), to designate the insect bred in this country from the "jumping seeds" from Mexico; but it is very doubtful whether it will retain this position, as certainly the insect, in the larva state at least, differs considerably from the type, viz. in *not having the legs and prolegs developed*, and in its undergoing its changes *within* the seed, instead of quitting it, before changing into pupa.

The British species are thus arranged :—

- A. Anterior wings with the ground-colour white, or whitish, and the ocelloid patch with *metallic-lustred streaks, not copper-coloured* Species 1-3
- B. Anterior wings with the ground-colour smoky grey, and the *metallic streaks* of the ocelloid patch *copper-coloured* Species . 4
- C. Anterior wings with the ground-colour *smoky black*, and the *ocelloid patch faintly indicated* Species . 5

1. **Juliana**, Bent. MSS. Alis anticis cretaceis; basi nebula magna alteraque ad apicem, strigis variis nigro-fuliginosis; costa strigulis cretaceis geminatis; macula ocellari ad angulum analem cæruleo ochraceoque varia, punctis lineolisque atris; posticis nigro-fuliginosis. ♂ Exp. al. $8\frac{1}{2}$ -9 lin.

Head pale drab behind, dusky in front. Face dusky drab. Eyes black. Palpi as long as the head, drab; the terminal joint black. Antennæ fuscous. Thorax: in front and on the vertex smoky brown; pale drab behind, especially at the sides. Patagia smoky brown at the base, pale drab at the apex. Anterior wings dull, pale drab, with smoky and ochreous brown and black markings. At the base is a streaky, smoky brown or black cloud, softening off and extending beyond the middle of the costa, but retiring towards the dorsal margin, along which it proceeds one-third, with an undefined and somewhat concave edge. Beyond the middle of the dorsal margin is another similar-coloured, but slightly paler cloud, mixed with ochreous brown, occupying the whole of the apical portion, and reaching the apex with a convex border, which, towards the middle of its course, encounters three black spots placed transversely, and broadly edged posteriorly with leaden-coloured, lustrous scales. These are followed by the ocelloid patch, which is distinct, edged with cream-colour, the space enclosed being dark ochreous brown, marked with longitudinal black lines. This patch is edged posteriorly with lustrous leaden-coloured scales, with a streak of similar colour towards the anal angle. The costa is marked throughout, the maculations beyond the middle, being in the form of geminated streaks, five in number, and cream-colour, which fuse, and are produced into lustrous blue, oblique streaks, directed to the apical margin. Apical spot distinct. The pale portion of the wing, especially towards the costa, is streaked with smoky black; a smoky-black, undefined streak is on the dorsal margin. Apical scales umber, with the bases very narrowly paler; slightly interrupted below the apex, beyond the middle, and at the anal angle. Cilia glossy, smoky brown, with very narrow, paler bases. Posterior wings and marginal scales dull umber, palest at the base. Cilia glossy, straw-colour. Abdomen umber, the segments edged with straw-coloured scales. ♀ Exp. al. 8-9 lin.

An uncommon species ; very variable in colour, and a little so in size. The chief variation consists in the more or less developed basal cloud ; in some specimens it is almost wanting, whilst in others it occupies fully one-third of the surface.

The imago appears in July among Oaks ; it occurs in Hyde Park, in Suffolk, Cheshire, and in Ireland.

The larva is said to feed in Acorns.

2. *splendana*, Hüb. Alis anticis cinereis, fusco-strigatis ; postica brunneis obscuris ; macula ocellari magna subviolacea, interne aurea, strigis longitudinalibus atris ; posticis fuscis. ♂ Exp. al. 6-8 lin.

Head greyish drab, paler above the eyes. Face greyish drab. Eyes dark brown. Palpi longer than the head, grey, except at the base above, where they are pale drab. Antennæ fuscous. Thorax and patagia greyish drab. Anterior wings dull, grey, with numerous dusky streaks ; an umber cloud at the apex, in which is a metallic-lustred ocelloid patch. At the base is a faint streaky rhomboid patch, most visible towards the dorsal margin. The costa fuscous, marked throughout with grey streaks ; those beyond the middle are geminated, five in number, and produced. The apical umber-cloud occupies one-third of the dorsal margin, and passes off roundly and obliquely to the apex, where it becomes paler ; it encompasses the ocelloid patch, which consists of blue metallic-lustred markings edged with black, with a broad dusky ochreous space between, marked longitudinally with black lines. In some specimens one or two very slender lustrous blue streaks are visible below the apical half of the costa, which are produced towards a white mark below the apical spot. Apical scales black, with white tips, sometimes speckled with white, and sometimes interrupted below the apical spot. Cilia iron-grey, somewhat paler at the anal angle. Posterior wings and marginal scales fuscous, the latter with paler bases. Cilia grey. Abdomen grey. ♀ Exp. al. 7-8½ lin.

An uncommon species ; variable in size and colour. In some specimens the ground-colour is pale greyish-drab, in others dark grey, and the intermediate shades occur. It is nearest allied to *C. grossana*, but the basal portion of the wing is *less clouded, and the apical portion darker*.

The imago appears in June and July among Oaks and Wild Apple. It occurs at Darenth, Greenhithe, Plumstead, and Wickham Woods ; at Hampstead, Epping Forest, near Guildford, and other places round London, and the south of England.

The pupa is 4½ lines in length, of a reddish-brown colour ; head, thorax, and wing cases slightly shining ; the abdomen dull ; puparium dark amber-colour and semi-transparent.

The larva is about 6 lines long, stout, sluggish, and of a dirty white, sometimes pinkish colour, with the head and shield very pale rufous. It feeds in Acorns, and is full-fed at the end of September or beginning of October. When about to assume the pupa state, it eats its way out, just above the cup, and seeks a convenient place, where it spins a cocoon of pale brown colour, of the consistency of paper. According to M. Guenée, the cocoon should be sought for among Moss.

3. **grossana**, Haw. Alis anticis fuliginoso-cinereis; medio fascia obliqua cinereo-albida; macula ocellari subviolacea, interne subochracea, punctis atris; posticis aureo-brunneis vel saturate fuscis.
♂ Exp. al. 7-8 lin.

Head dull dark grey, palest behind. Face dull dark grey. Eyes intense purplish brown, with drab scales behind. Palpi as long as the head, grey. Antennæ smoky black, paler beneath. Thorax smoky black, streaked transversely, and irrorated with grey. Patagia paler at the apex than the thorax. Anterior wings dull pale grey, with darker markings of fuscous and umber. At the base is a streaked umber rhomboid patch, its apex slightly truncate: it extends one-fourth along the costa, and one-third along the dorsal margin. The costa is umber-coloured, and before the middle are two, and beyond, five, geminated grey streaks: these latter produced, and directed towards a point below the apical spot, which is distinct, umber anteriorly, grey posteriorly. From the middle of the dorsal margin to the apex is a dusky umber cloud, and within it is the ocelloid patch, which is very distinct, but irregular in shape; it is bounded by brown or black curved lines and streaks of lustrous blue scales; the space between is scarcely paler than the apical cloud, and is marked with longitudinal black lines, sometimes with spots. At the middle of the dorsal margin is a whitish blotch, streaked with black. Apical scales black (at the anal angle mixed with white), with white tips. Cilia dark brown, shining, speckled and tipped with white, pale at the anal angle. Posterior wings rich purplish brown, sometimes umber, darkest at the apex. Marginal scales shining, of similar colours, the bases pale. Cilia pale grey. Abdomen umber, with the margins of the segments shining grey. ♀ Exp. al. $7\frac{1}{2}$ - $8\frac{1}{2}$ lin.

This is a common species where Beeches grow. It varies considerably in size and colour. In general aspect it is like *C. splendana*, but is distinguished from it by the *darker rhomboid-marked basal portion of the anterior wings*.

Obs. In a very oblique direction, in fresh specimens, the upper wings exhibit a pale green iridescence at the apex and base, and pale violet on the costa. The posterior wings are

blue, like the colour in *Apatura Iris*. On the under-side the anterior wings at the base blue, like *A. Iris*; at the apex like *Polyommatus Corydon*. The posterior wings mottled, with blue at the apex.

The imago appears in June and July, and occurs at Birch, Darenth, and West Wickham Woods; at Mickleham, Norbury Park, near Croydon, and other places round London; in the New Forest, &c.

The pupa is 5 lines long, and of a dull brown colour.

The larva, when full-grown, is from 5-6 lines long, of a dull, pale amber-yellow colour, clouded with orange in the manner of longitudinal stripes; the spots or protuberances are also orange-colour and shining. Head pale hazel and diaphanous; shield pale luteous and transparent. A dull, leaden-coloured spot on the centre of the twelfth segment; the anal one suddenly constricted, and luteous. Beneath, the colour is pale, yellowish pink. In shape this larva is somewhat flattened, narrowing towards the anus, and sluggish in its movements. It is also variable in its colours: in some instances, the ground-colour is dirty white, the cloudings more distinct, more isolated, and plum-coloured. In its young state it is much brighter coloured than when full-grown, and may be found in August; it lives through the winter and spring, and goes into pupa in May, previously making a cocoon, spun with whitish silk. After emerging from the egg, the larva eats its way through the pericarp of the Beech-mast into the seeds, which it enters at, or near the bottom; after feeding for some time in one seed, it proceeds to the other, and after devouring the whole of it (leaving nothing but excrement in its place), it eats its way out at the top, afterwards seeking a convenient place to spin its cocoon.

4. *Pomonella*, Linn. *Alis anticis cinereo-fuliginosis, strigis numerosis fuscis; ad apicem brunneis obscuris; macula ocellari magna, strigis cupreis; posticis aureo-brunneis.* ♂ Exp. al. $8\frac{1}{2}$ -9 lin.

Head pale umber, the scales tipped with grey; grey behind. Face slightly darker than the head. Eyes black. Palpi slightly longer than the head, smoky black; pale at the base above and between. Antennæ fuscous. Thorax umber, speckled with grey. Patagia paler than the thorax. Anterior wings dull umber, with dull grey streaks; at the apex is a glossy chestnut-brown mark, bearing the ocelloid patch. At the base is an umber truncate patch, marked anteriorly with geminated, transverse, wavy grey streaks, which attain the dorsal margin; it extends one-third along the costa, and has its posterior edge slightly waved; beyond this patch, on the

costa, are two geminated streaks before the middle, and five more beyond; the three nearest to the basal patch are produced, and reach the dorsal margin, the rest (except the apical and subapical ones, which are directed to a point below the apical spot) are intercepted by the chestnut-brown mark which occupies the apical region of the wing, covering one-third of the dorsal margin; the anterior edge of this mark is rounded, and passes off at the apex. The ocelloid patch is large, distinct, and bounded by three unequal, curved, bright, coppery-lustred patches; at the anterior edge of the apical mark is an intense umber-coloured, curved, and somewhat wedge-shaped streak. Apical scales intense umber, sometimes irrorated with grey. Cilia glossy, dark dusky brown, somewhat mottled. Posterior wings golden brown, darkest at the margin. Marginal scales dark fuscous, with straw-colour bases. Cilia at the apex grey, merging, towards the posterior angle, into straw-colour. Abdomen glossy, fuscous brown. ♀ Exp. al. $8\frac{1}{2}$ – $9\frac{1}{2}$ lin.

A common insect in Apple orchards. Of the same size as the two preceding (*C. splendana* and *grossana*), and distinguished from both by the *smoky appearance of the anterior wings*, and the *copper-coloured markings* of the anal angle.

The imago appears in June and July, wherever Apple-trees abound. This species occurs in Ireland.

The pupa is about $4\frac{1}{2}$ lines long, of ferruginous-brown colour. Head, wing, and limb cases shining; the abdomen dull.

The larva feeds in the fruit of the Apple and Pear; and a very lucid and interesting account of its habits is to be found in the 'Letters of Rusticus,' pp. 85 and 86. When full-grown, it is from 6–7 lines long, of a pinkish colour, and sluggish in its movements. Head pale brown, with four irregular, darker brown, longitudinal stripes; shield luteous, shining and transparent, with a pale dorsal division, and a small heart-shaped, dusky-coloured mark on each side, placed transversely near the base. The tubercles raised, shining, oval, and of the same colour as the body. When young, it is of a bright pink colour. In September or October they cease to feed, and spin a cocoon, remaining quiescent therein till April or May, when they assume the pupa state.

5. *funebrana*, Treits. Alis anticis nigro-fuliginosis, strigulis saturatoribus; macula ocellari ad angulum analem indistincte notata; posticis fuscis. ♂ Exp. al. 6 lin.

Head smoky black. Face paler than the head. Eyes black. Palpi twice as long as the head, dull drab, the apex dusky brown. Antennæ smoky black. Thorax smoky black, with a circular black patch at the base, surrounded by grey atoms. Patagia smoky black,

slightly paler than the thorax. Anterior wings obscure black, with smoky-black markings and streaks, and white costal marks. At the base of the dorsal margin is a whitish mark, and at the middle are two curved, white patches, each enclosing a black streak; the costa is black, and streaked throughout: towards the apex are six or seven whitish, geminated streaks, followed by the apical spot, which is distinct. The apical margin is suffused with white atoms, and the ocelloid patch indicated by three slightly lustrous marks at the anal angle, the enclosed space being smoky black, bearing three longitudinal jet-black lines. Apical scales black, with pale bases. Cilia shining, smoky black, paler at the anal angle. Posterior wings and marginal scales dark fuscous, the latter with pale bases. Cilia yellowish. Abdomen smoky black. ♀ Exp. al. $6\frac{1}{2}$ lin. Deeper in colour than the ♂.

A rare species in cabinets, but common in nature, especially in the larva state. Not variable, either in colour or markings; but the ♂ after death appears liable to fade, becoming greyer. In size and general appearance like *Cnephasia nubilana*, but distinguished from it by the presence of the ocelloid patch at the anal angle. This insect was first introduced into the British list by Mr. H. T. Stainton, who recorded it in the 'Zoologist' for 1848, p. 1989; and since then it has turned up occasionally. Mr. Bond has beaten it out of Sloe bushes, near Cambridge. It also occurs near Guildford.

The imago appears in June, amongst Plum trees in gardens, and among Sloe bushes in hedges.

The pupa is $3\frac{1}{2}$ lines long. The puparium is amber-coloured, somewhat inclining to brown in the dorsal region. The larva $4\frac{1}{2}$ to 5 lines in length, and of a pale red colour. Head heart-shaped, pitchy black; shield luteous, very transparent, and mottled with pale brown clouds towards the base; the spots are concolorous with the body, slightly raised and rather more glossy. The anal segment pitchy brown, and shining. Our specimens burrowed into cork, previous to assuming the pupa state; we conclude therefore that the natural habit is to burrow into the bark. [Query—Does this larva vary? we have found another kind of larva in the Plum, of a dirty drab colour, with the spots blackish; but failed to rear them.]

Genus III. GRAPHOLITA, STEPHENS.

Palpi longer than the head, porrected horizontally, approximate; basal joint slender, elongated, curved upwards, truncate; apical minute, stout, oval, half as long as the basal; middle ascending, curved,

thickened beyond the middle, its lower half not so stout as the basal, more than three times as long as the apical. Maxillæ longer than the palpi. Thorax robust, ovate. Anterior wings: length greater than twice the width. Costa arcuated, apex obtuse, produced; apical margin concave, dorsal margin rounded. The costal vein reaches the margin before the middle, the subcostal nervures not equidistant. The discoidal cell receives a nervure originating near the second subcostal nervure, and passing to near the insertion of the second apical nervure. The apical vein gives out five nervures, of which the first is furcate shortly beyond its origin. Posterior wings: apex obtuse, apical margin concave; basal angle sometimes produced. Abdomen slender, and tufted in the ♂, stouter in the ♀.

This is synonymous with M. Guenée's genus *Catoptria*; this latter appellation being now adopted to designate such part of his species as have the costa folded, and are placed in the second family *Plicatæ*. See *ante*, page 88.

The insects comprised in this genus, although assorting well with the *Carpocapsidæ*, we do not consider so natural in their relations; but this must be decided by a discrimination of the larvæ, which at present are but little known; some of them are known to feed in roots, and, in this respect, approach the *Dicro-ramp hæ*; but they cannot be located there, because the perfect insects have not the folded costa; others are supposed to feed in seeds, thus resembling *Endopisa*; some feed on herbaceous plants; and of others the larvæ are altogether unknown.

There are eight British species in this genus, which are arranged as in the following table:—

A. Anterior wings with <i>the tips ochreous</i>	Species . 1
B. Anterior wings with numerous streaks on the costa, and a <i>small distinct ocelloid patch</i> at the anal angle.	Species 2-5
C. Anterior wings with a <i>large distinct ocelloid patch</i> at the anal angle.	
<i>a.</i> Anterior wings <i>white or whitish, with oblique fuscous fasciæ</i>	Species 6-7
<i>a a.</i> Anterior wings <i>yellow, with oblique fuscous fasciæ</i>	Species . 8

1. **Albersana**, Hüb. Alis anticis brunneis, apice ochraceis; basi nebulis plumbeis impositis, ante apicem striga cærulea; costa postica strigis quatuor subargenteis; posticis albicantibus griseo-irroratis. ♂ Exp. al. 8½ lin.

Head ochreous. Face darker. Eyes black. Palpi longer than the head, above and at the sides ochreous at the base, dark grey at the apex, drab beneath and between. Antennæ glossy, dark fuscous. Thorax and patagia ochreous, the latter paler and glossy at

the apex. Anterior wings glossy, pale chocolate-brown at the base, ochreous at the apex, and the latter marked with pale lustrous streaks; the dark or brown portion of the wing is ochreous at the base, and pale towards the costa, to the middle of which it extends, and nearly to the anal angle on the dorsal margin, its posterior edge being rounded and undulate, and includes a darker fascia proceeding from the middle of the costa, which dilates slightly before attaining the dorsal margin, is edged posteriorly with a distinct, leaden, lustrous streak, and anteriorly with another of the same nature, but less defined. The costa, beyond the middle, is marked with four lustrous, leaden streaks, edged anteriorly with dusky, and below them is another, apparently produced from the second costal one, but not always connected thereto. The ocelloid patch is distinct, and formed of lustrous leaden patches; the space enclosed is ochreous, marked with black spots or longitudinal lines. Apical scales ferruginous brown at the apex, becoming paler at the anal angle. Cilia ochreous to the middle, then pale brown to the anal angle, where they again become ochreous, and iron-grey beyond. Posterior wings shining, pale grey at the base, merging into dusky, very pale fuscous, with an ochreous tinge, especially at the apex. Marginal scales grey. Cilia drab. Abdomen dark brown, the apex ochreous. ♀ Exp. al. $8\frac{1}{2}$ lin. The anterior wings slightly richer in colour.

Not of very frequent occurrence. Constant in colour, but variable in size. In general appearance it resembles *Antithesia ochroleucana*, only very much smaller; but the golden and metallic-lustrous markings at once distinguish it.

The imago appears in May and June, and occurs at Dulwich and West Wickham Woods, and other places near London; at Fox's Wood, Brislington; in the New Forest, &c.

The larva may be found in August, feeding on the Honey-suckle, the leaves of which it folds forwards, longitudinally, the whole length, or turns down the tips, and feeds on the upper surface *within* the chamber thus formed. It is greenish grey in colour, the head large, yellowish, with a black spot on each side. Mandibles brown. Shield the same colour as the head, but rather wider, with two black dots on each side, one large, the other small, and placed close together; the tubercles are whitish. Legs yellowish; pro-legs yellowish, except the anal pair, which are whitish.

2. *Ulicetana*, Haw. Alis anticis olivaceo-albidis; strigis nebulisque fuscis; squamis ochraceis irroratis sparsis; margine costali strigis geminatis; macula ocellari distincte notata, strigis aureis lineisque longitudinalibus atris; posticis basi griseis, apice fusciscentibus. ♂ Exp. al. $5-6\frac{1}{2}$ lin.

Head olive drab. Face slightly darker. Eyes black. Palpi as

long as the head, drab, terminal joint dusky. Antennæ fuscous. Thorax and patagia olive-drab. Anterior wings dull olive, or dusky drab, streaked with fuscous on the dorsal margin, and a fuscous cloud towards the anal angle; in some lights an irroration of ochreous scales is visible. On the costa are about seven drab, geminated streaks, with fuscous interspaces, the former slightly lustrous, and sometimes produced into simple lines, directed towards the apical margin. In the fuscous cloud at the anal angle is a distinct ocelloid patch, edged with dull golden, or brassy lustred streaks, enclosing three longitudinal black lines. Anterior to the ocelloid patch are one or two black spots (not always present). Apical scales olive-drab or brown, tipped with pale grey. Cilia glossy, fuscous grey. Posterior wings grey at the base, softening into pale fuscous at the margins, darkest at the apex. Marginal scales pale fuscous, the bases grey. Cilia grey. Abdomen dark iron-grey, the apex fuscous. ♀ Exp. al. 6-6½ lin. The ocelloid patch is not in general so distinct as in the ♂.

An exceedingly abundant species, occurring plentifully wherever the *Ulex* grows; it is constant in size, and generally so in the ground-colour of the anterior wings; the apical dark portion sometimes varies in intensity. The Scotch examples are paler than the English ones as regards the ground-colour, and the apical cloud darker, thus giving the insect a very different appearance.

3. **Hypericana**, Hüb. *Alis anticis flavo-fulvis; costa strigis saturatioribus pallidioribusque; macula ocellari subargentea punctis tribus atris; posticis griseis vel cinereis.* ♂ Exp. al. 7 lin.

Head and face bright ochreous. Eyes black. Palpi as long as the head, dusky grey at the apex, drab at the base. Antennæ iron-grey. Thorax and patagia ochreous, the latter glossy at the apex. Anterior wings ochreous, inclining to pale ferruginous; the costa is marked throughout with geminated streaks, those beyond the middle most distinct and produced; in some lights of a lustrous appearance. Towards the base and the dorsal margin, are some faint dusky longitudinal streaks. The ocelloid patch is distinct, and formed of two golden lustred, curved streaks on a yellow ground, the space between ochreous, marked with three longitudinal black lines. Apical scales dull ochreous, with pale shining bases. Cilia ochreous brown. Posterior wings grey, with a slight fuscous tinge at the margin. Marginal scales grey, with straw-coloured bases. Cilia long, grey, with a yellow tinge, especially at, and towards, the apex. Abdomen fuscous grey, the apex drab. ♀ Exp. al. 6½-7 lin., marked like the ♂, but warmer in colour, which is rich ferruginous. Posterior wings smoky brown, darkest at the apex. Marginal scales dark grey, with paler bases. Cilia long, pale fuscous, yellowish at the apex. Abdomen dark fuscous.

Not uncommon among St. John's Wort (*Hypericum*). It varies in size and in the colour of the anterior wings, the latter ranging from ochreous drab to reddish ochreous, or pale ferruginous.

The imago appears in June and July, and occurs at Coombe, Darenth, and West Wickham Woods, and other places in the Metropolitan district; in Cheshire, also at Enniskerry in Ireland.

The larva feeds in the tops of *Hypericum perforatum* and *H. hirsutum*.

4. *modestana*, Fischer. Alis anticis nitidis albidisve stramineis; strigis maculisque brunneis; strigulis geminatis costalibus albidis; macula ocellari distincta plumbea, lineis longitudinalibus atris; posticis fuscis. ♂ Exp. al. $6\frac{1}{2}$ -7 lin.

Head and face cream-colour. Eyes intense brown. Palpi above cream-colour, slightly rufescent, greyish at the sides beneath, at the apex dusky, at the base pale fuscous. Antennæ shining, fuscous-grey. Thorax and patagia drab. Anterior wings slightly shining, drab, with pale umbreous markings; at the base is a speckled umbreous patch, of irregular shape, followed by others in the centre of the wing. The costa is streaked throughout; before the middle are two, and beyond four, drab-coloured geminations, mostly produced, fusing and directed to a point in the apical margin, below the apex. The apical region of the wing broadly tawny or pale fuscous, slightly irrorated with umber atoms. The ocelloid patch is distinct, bounded anteriorly and posteriorly by a slightly lustrous, leaden-coloured streak, with longitudinal black lines between. Apical scales tawny and drab. Cilia drab, slightly darker at the apex. Posterior wings fuscous, clothed with coarse scales. Marginal scales and cilia drab. Abdomen fuscous, the caudal tuft drab. ♀ Exp. al. 7-7½ lin. In general appearance like the ♂, but the markings are more distinct and the colours slightly darker.

A local species, and in but few cabinets; it most resembles *G. microgrammana*, but its larger size and the presence of umbreous markings readily distinguish it.

The imago appears in July among mixed herbage, at Charlton Sand-pit. We are not aware of any other locality.

5. *microgrammana*, Guen. Alis anticis nitidis, pallide ochraceis, fusco multi-strigatis; strigulis costalibus subargenteis; macula ocellari subaurea, punctis atris; posticis *maris* griseis; *fœm.* fusco-cinereis; ciliis albis. ♂ Exp. al. 5 lin.

Head and face yellowish drab, the latter paler below. Eyes black. Palpi longer than the head, silvery white. Antennæ drab. Thorax and patagia yellowish drab. Anterior wings glossy, drab, with an

ochreous tinge, thickly and finely streaked with fuscous. The costa is geminated throughout; the geminations are much produced, particularly beyond the middle; sometimes merging into lustrous blue lines. At the anal angle is an ocelloid patch, edged anteriorly and posteriorly with pale lustrous scales, the interspace marked with longitudinal black lines, which are more or less present. The remaining portions of the wing are streaked transversely, most apparent on the dorsal margin. Apical scales glossy, umbreous, with drab tips. Cilia very glossy, brownish drab. Posterior wings glossy, grey, with a pearly tinge, merging into fuscous at the apex. Marginal scales fuscous, with paler bases. Cilia pale drab. Legs pale fuscous. Abdomen glossy, leaden colour, the apex drab. ♀ Exp. al. $4\frac{1}{2}$ lin. Marked like the ♂, but richer in colour; the posterior wings are darker, somewhat umbreous; the scales coarse. Marginal scales pale umbreous, with drab bases.

Taken on the coast near Deal, in July, by Mr. Bouchard; also a single instance was captured by Mr. Edwin Shepherd, in company with *G. Hypericana*, he thinks, near London.

6. *Wimmerana*, Treits. Alis anticis albis; nebulis maculaque fuscocinereis; costa postica strigulis cinereis; macula ocellari rotundata, atomis atris; posticis griseis. ♂ Exp. al. 8 lin.

Head and face white. Eyes black. Palpi longer than the head, white. Antennæ drab, the base white. Thorax and patagia white, approaching cream-colour. Anterior wings dull, white, with faint drab clouds and fuscous markings; the costa before the middle narrowly pale fuscous; beyond, with darker fuscous, short, oblique streaks (sometimes produced), with broad, pale geminations between. At the middle of the base is a lanceolate fuscous mark, longitudinally placed, dilating in width and deepening in colour posteriorly; its apex well defined; a fainter, similar-coloured mark is on the dorsal margin, towards the base. At the anal angle is a fuscous cloud surrounding the ocelloid patch, which is roundish, white, and bearing two or three black lines posteriorly. The apex white, with a fuscous patch below; the pale portions of the wing clouded with drab, especially on the dorsal margin. Apical scales drab, with the apices narrowly fuscous. Cilia drab. Posterior wings grey, softening into pale fuscous at the margins, especially at the apex. Marginal scales slightly fuscous, bases whitish. Cilia whitish. Abdomen fuscous, the edges of the segments fringed with long, glossy, drab scales; the caudal tuft drab. ♀ Exp. al. 8 lin.

A coast species, and tolerably constant in size and colour. It was first added to the British list by Mr. J. W. Douglas, who captured it in 1842. The *G. lacteana*, Treits., of the Museum

Catalogue, p. 62 (*vide* also the Stephensian Collection in the British Museum), we think is but a pale instance of this insect.

The imago appears in July amongst Sea Wormwood (*Artemisia maritima*). It occurs at St. Osyth's in Essex, on the banks of the Thames, below Gravesend, and other places. In all probability the larva feeds either in the stems or roots of the above-named plant.

7. *pupillana*, Linn. Alis anticis albis, basi macula fasciaque medio cinereo-fuscis, nebulis cinereis margine dorsali; macula ocellari magna distincta argentea, atroque lineata; ciliis albis; posticis fusco-cinereis. ♂ Exp. al. 8 lin.

Head very pale drab, inclining to white. Face dirty white. Eyes black. Palpi longer than the head, white above and between, drab at the sides and beneath. Antennæ glossy drab. Thorax and patagia pale drab, the former slightly darker behind. Anterior wings glossy, white, with fuscous markings, and a broad longitudinal dark mark on the ocelloid patch. The base is occupied by a dark cloud, pale anteriorly, and deepest at its posterior rounded edge; it extends one-fourth along the costa and near to the middle of the dorsal margin. From the middle of the costa to within the anal angle proceeds a sharply-defined, similar-coloured, narrow, and nearly straight fascia, which softens and dilates at its termination towards the base. From the centre of this fascia proceeds a broad, curved band, formed of transverse rows of black and ochreous scales, reaching the apex, and forming the upper portion of the exceedingly large ocelloid patch, which is white, and of oval shape within, bearing a broad longitudinal smoky-black mark, with three transverse golden streaks, speckled with black, and twice interrupted with ochreous. The costa is marked with three or more drab spots between the central fascia and the apex. Apical scales and cilia white, finely speckled with black, the latter with the bases wholly white. Posterior wings glossy, dusky brown. Marginal scales paler. Cilia white. Abdomen glossy, fuscous grey, the apex drab.

A coast species, where it is somewhat common; constant in size, but variable in the intensity of its colours. In appearance it resembles *Grapholita Wimmerana* and *Thiodia citrana*; from the former it is distinguished by its *larger size, its more distinct and darker markings*, but most especially by the *very strongly-expressed* longitudinal interrupted triple streak in the ocelloid patch; from *Thiodia citrana* by its being *smaller, and having the ground-colour of the anterior wings white, instead of primrose-yellow*.

The imago appears in August, flying among Sea Wormwood

(*Artemisia maritima*). It occurs in Essex, Kent, the Isles of Wight and Portland, on the coasts of Devonshire, Pembrokeshire, &c.

The larva feeds in the roots of the above-named plant.

8. *citrana*, Hüb. Alis anticis pallide sulphureis; fasciis duabus obliquis olivaceo-fuscis; costa punctis nigris; macula ocellari ochracea, atomis atris; posticis fusco-griseis. ♂ Exp. al. 9-9½ lin.

Head and face pale primrose colour. Eyes grey. Palpi longer than the head, above and at the sides ochreous, pale primrose between and beneath. Antennæ alternated with fuscous and whitish. Thorax and patagia pale primrose. Anterior wings dull, primrose colour, with dusky ochreous clouds and markings; the costa marked throughout with geminations, widening as they approach the apex. One irregular streak or fascia originates near the base on the costa, and reaches the dorsal margin beyond the middle. At the middle of the costa proceeds another fascia, which extends to the anal angle; its origin and termination are narrow; it dilates suddenly towards the base, shortly after its commencement, and gives out a stout branch (near the anal angle), which attains the apex. An irregular streak runs along the dorsal margin towards the base, the margin itself being regularly sprinkled with dusky markings. The ocelloid patch is distinct, ochreous brown, with a pale border, and bearing two or three longitudinal umber or black streaks. Apical scales and cilia dull drab. Posterior wings grey, with a pale violet tinge, and merging into fuscous at the margins. Marginal scales grey, with paler bases. Cilia pale grey. Abdomen glossy, grey; the apex drab. ♀ Exp. al. 9-9½ lin.

A coast species, and unknown as British previous to 1847. It much resembles *G. Wimmerana*, but is *considerably larger, and further distinguished from it by its pale primrose-coloured anterior wings.*

The imago appears in July, and occurs at Southend in Essex, having been captured there by Messrs. J. B. Hodgkinson and S. Stevens; also at Lytham in Lancashire. It frequents the Rest Harrow (*Ononis arvensis* ?), which plant is supposed to nourish the larva.

FAMILY VII. CNEPHASIDÆ.

The insects included in this section, from their great general resemblance, form a very puzzling group, and much remains yet to be done to work out their natural history. As a body, they

seem to affect the coast, although some of the species (*C. subjectana*, *Virgaureana*, and *nubilana*) are to be found everywhere throughout these islands.

The costa in the ♀ is usually more arcuated than in the ♂, and in repose the wings are not held in a very deflexed position.

The larvæ, so far as known, are polyphagous, and of sluggish habit.

This family contains only three genera, which are arranged as follows:—

- A. Anterior wings *with the costa in the ♂ nearly straight, in the ♀ rounded.*
 a. Anterior wings *elongate in the ♂.*
 b. Palpi *with the middle joint more than twice the length of the apical* . . . 1. SPHALEROPTERA.
- B. Anterior wings *with the costa slightly arcuated in both sexes, but mostly so in the ♀.*
 b b. Palpi *with the middle joint three times as long as the apical* . . . 2. CNEPHASIA.
- C. Anterior wings *with the costa slightly, but equally, arcuated in both sexes.*
 b b b. Palpi *with the middle joint twice as long as the apical* . . . 3. ABLABIA.

Genus I. SPHALEROPTERA, GUENÉE.

Palpi longer than the head, remote, ascending; basal joint stout, elongate, pyriform, truncate; apical slender, as long as the basal, slightly thickened towards the apex; middle stout, thickened beyond the middle, more than twice the length of the apical. Maxillæ stout, as long as the palpi. Maxillary palpi minute, three-jointed; basal ear-shaped, studded with bristly hairs; middle and apical both globose. Thorax rather slender, ovate. Anterior wings: length considerably more than twice the width; the costa in the ♂ nearly straight; in the ♀ regularly arcuated; apical margin in the ♂ straight, oblique; in the ♀ oblique, concave; dorsal margin nearly straight in both sexes. The costal vein reaches the margin at the middle; subcostal nervures not equidistant. The discoidal cell widest at the insertion of the submedian nervure, and scarcely extending two-thirds along the wing. Posterior wings alike in both sexes; apex obtuse; apical margin concave; basal angle produced. Abdomen long, slender in the ♂; stouter in the ♀; tufted in both sexes.

Closely allied to the succeeding genus in habit, but offering sufficient structural differences to rank as distinct; these consist

of the attenuated form, and nearly straight costa, of the anterior wings of the ♂, which are also immaculate, whilst in the ♀ they are fasciated. The perfect insects frequent moist situations, and are tolerably common in such localities.

1. *ictericana*, Haw. Alis anticis *maris* albidis, fulvo-irroratis; posticis griseis; *femine* albidis nebulis fasciisque pallide fuscis; posticis griseis. ♂ Exp. al. 8–10½ lin.

Head pale ochreous. Face greyish. Eyes black. Palpi longer than the head, yellowish drab. Antennæ grey. Thorax and patagia pale ochreous, darker in front. Anterior wings glossy, unicolorous, pale ochreous. Apical scales slightly paler. Cilia still paler. Posterior wings grey, with a slight pearly lustre, and yellowish at the apex. Marginal scales pale straw-colour. Cilia paler. Abdomen glossy, dark grey; the apex straw-colour. ♀ Exp. al. 9–10 lin. Anterior wings glossy, pale drab, with dusky ochreous markings. At the base is a rhomboid patch (sometimes produced at the angle) extending one-fourth along the costa, and about the same distance along the dorsal margin; pale at its origin, merging into dusky ochreous posteriorly. At the middle of the costa commences a similar-coloured, but rather darker fascia, sharply defined, and deeply biangulate on its anterior edge, and attaining the anal angle; its posterior edge straighter and suffusing, and from the middle branching off to the apex, enclosing a palish space on the costa. The apical margin dusky ochreous, sometimes reticulated in the subapical region. The costa and pale portions of the wing streaked with pale, wavy, transverse lines.

A very common species in damp meadows, and similar situations. Both the ♂ and ♀ are variable in size and colour. The former sex resembles *Tortrix icterana*, but is distinguished from it by its nearly straight costa, and longer narrower wings.

The ♀ nearly approaches, in appearance, to *Cnephasia alternella*, but the ground-colour of the wings and the markings have an ochreous tinge, and are paler.

The imago appears in June and July. It was formerly taken in the fields round Bow and Limehouse, and still occurs in the Isle of Dogs, Hackney Marshes, at Charlton, Lewisham, Southend, Hastings, near Dover, in Cheshire, &c.

The larva feeds on *Aster tripoleum*, and other plants, and is most probably polyphagous.

Genus II. CNEPHASIA, CURTIS.

Palpi longer than the head, remote, ascending, densely clothed with scales; basal joint drooping, curved, pyriform; apical same

length as the basal, slender, straight, cylindrical; middle joint three times the length of the apical, curved at its base, thickest beyond the middle. Maxillæ rather longer than the palpi. Thorax robust, trigonate and tufted behind. Anterior wings: length greater than twice the width; costa slightly arcuated in the ♂, more so in the ♀; apex subacute; apical margin rounded, oblique; dorsal margin rounded. The costal vein reaches the margin at the middle; subcostal nervures not equidistant. Discoidal cell situated towards the middle of the wing; widest at the insertion of the submedian nervure, and scarcely extending two-thirds its length. Posterior wings: apex obtuse; apical margin concave; dorsal entire. Abdomen: tufted in both sexes, slender in the ♂.

An extensive genus, and for the most part containing insects of exceedingly common occurrence, although many are local, and affect the coast. The larvæ only of the commonest species are known. In the perfect insects, the colouring is almost always of white or grey, with darker markings. Most probably this genus will become modified when the preparatory states have been accurately observed.

In Britain there are, at present, eleven species, which are arranged in the following order:—

- A. Anterior wings *with a distinct patch at the base.*
 a. Posterior wings *white* Species . 1
 b. Posterior wings *fuscous grey* Species . 2
 B. Anterior wings *without a distinct patch at the base, but with an abbreviated curved fascia beyond* Species 3–10
 C. Anterior wings *smoky black* Species . 11

1. *cinctana*, Schiff. Alis anticis niveis, punctis cinereis sparsis; fascia basi, medio obliqua maculaque costali postica aureo-brunneis, punctis atris; posticis lacteis vel submargaritaceis; punctis cinereis sparsis. ♂ Exp. al. 8–8½.

Head dull ferruginous brown, paler behind. Face darker above, paler below. Eyes black. Palpi longer than the head, above and at the sides ferruginous brown, slightly paler beneath and between. Antennæ ferruginous at the base, grey towards the apex. Thorax dull brown, mixed with ferruginous, the crest bright ferruginous. Patagia dull brown, at the apex glossy. Anterior wings glossy, snow-white, with ferruginous markings, speckled and edged with umber, with numerous iron-grey freckles at the apex. The basal patch extends one-sixth along the costa, and attains the dorsal margin by a nearly direct undulating line. At the middle of the costa commences a broad, sharply-defined, oblique fascia, reaching the dorsal margin near the anal angle; its anterior edge angulated before the middle, and its posterior indented shortly after its origin,

otherwise very undulate; near the apex, on the costa, is a short truncate patch, of the width of the central fascia, and directed towards it. The costal and dorsal margins between the markings speckled with black; the anal angle and apical region thickly studded with dark iron-grey freckles, disposed somewhat in transverse lines; apical margin white. In an oblique direction the principal markings have a rich golden-brown appearance. Apical scales very pale fawn-colour. Cilia darker. Posterior wings pearly white, with numerous grey freckles over the surface, especially towards the apex. Marginal scales and cilia very glossy, white. Abdomen glossy, umbreous; the segments fringed with long drab scales; the caudal tuft pale drab. ♀ Exp. al. 8 lin. Anterior and posterior wings as in the ♂. Abdomen glossy, dark grey; the segments more fringed and paler than in the ♂; apex obtuse and whitish.

First captured in 1857 by the Rev. J. C. Tress Beale, "on the sloping bank of a field at Alkham, near Dover," in July. The figure in the frontispiece of the 'Entomologist's Annual' for 1858, fig. 4, gives a most excellent idea of this insect. It is abundantly distinct from all the other British species of the genus, and easily recognized *by its pearly-white under-wings*.

2. *hybridana*, Hüb. Alis anticis ochraceo-albis; fasciis tribus, maculae ad angulum analem aureo-brunneis; punctis saturationibus; posticis fusco-griseis. ♂ Exp. al. 7-7½ lin.

Head and face fuscous. Eyes black. Palpi as long as the head, fuscous. Antennæ fuscous. Thorax and patagia golden brown, speckled with chocolate. Anterior wings glossy, cream-colour, pale drab, with a patch at the base, a broad irregular fascia in the middle, another near the apex, and with a patch at the anal angle, in different specimens more or less produced towards the middle of the disk, all pale fuscous, and more or less speckled and edged with chocolate-colour; viewed in an oblique direction, the dark markings assume a dull golden lustre. The basal patch extends one-fifth along the costa, and attains the opposite margin nearer the base with a rounded undulating edge. The central fascia is of nearly equal width throughout, hollowed and angulated on its anterior edge, and on its posterior border (where it is not so sharply defined); it is produced into an acute angle before the middle; the apical mark reaches near to the anal angle, and dilates in the middle; the patch at the anal angle is somewhat triangular in shape, but not always well defined. The costa is speckled, and between the central fascia and the apical mark are two conspicuous triangular fuscous spots. The pale portions of the wing speckled, or faintly streaked, with pale fuscous. Apical scales cream-colour, variably freckled or spotted with brown. Cilia cream-colour. Posterior wings glossy, fuscous grey. Marginal scales pale fuscous, with paler bases. Cilia cream-colour. Abdomen fuscous,

the apex cream-colour. ♀ Exp. al. $5\frac{1}{2}$ –6 lin. Anterior wings: the ground-colour paler, and the colour of the markings richer; they are more defined, and are in the *same position* as in the ♂, but *altogether broader*. The basal patch extends as far upon the dorsal margin as upon the costa; the central fascia is not produced on its posterior edge into an acute angle before the middle, but is *there truncate* or obtuse, and the apical mark always *more developed and distinct*.

Rather a common insect in chalky districts. The sexes differ much in appearance, but *inter se* are tolerably constant both in size and colour; the ♂ is of the dimensions of *C. Virgaureana*, and the ♀ those of *C. nubilana*. Abundantly *distinct from all the other species of this genus*; it comes nearest to *C. cinctana*, but is at once *separable from it by its fuscous-grey under-wings*.

The imago appears in June and July; occurring at Darenth and Birch Woods, the Downs at Sanderstead, and Stoat's Nest; beyond Beckenham; near Dover; in Devonshire; the New Forest; in Cheshire, &c. Not uncommon near Dublin.

3. *subjectana*, Guen. Alis anticis cinereis, fasciis tribus fuscis, brunneo-punctatis; anteriori abbreviata; posticis fusco-griseis. ♂ Exp. al. 7– $8\frac{1}{2}$ lin.

Head and face dusky drab. Eyes black. Palpi longer than the head, dusky drab, paler beneath. Antennæ dull brown. Thorax dull, pale fuscous. Patagia same colour as the thorax. Anterior wings dull, pale fuscous grey, with fuscous markings (inclining to umber). Near the base is a narrow, curved, angulated fascia, distinct to the middle, and from thence more or less visible, frequently abbreviated. At the centre of the costa commences a broad fascia extending to the anal angle, angulated on both sides, particularly on that nearest the base, where also it is most defined. Between the central fascia and the apex, on the costa, is a somewhat triangular, indistinct fuscous cloud, which in some specimens is produced and continued along the apical margin. The disk more or less freckled with minute umber spots, particularly at the edges of the markings. Apical scales grey. Cilia pale, fuscous grey. Posterior wings pale, fuscous grey, with a slight pearly gloss. Marginal scales pale fuscous, with paler bases. Cilia still paler. Abdomen iron-grey; the caudal tuft ochreous drab. ♀ Exp. al. 8– $8\frac{1}{2}$ lin. Anterior wings marked like those of the ♂, but rather more distinctly.

An exceedingly abundant species; constant in colour, but slightly variable as to size. It is allied to *C. Virgaureana*, and, according to M. Guenée, intermediate between this latter species and *C. Wahlbomiana* (not an established British insect). It is darker than *Wahlbomiana*, but not so dark as *Virgaureana*, nor is it so speckled as this last.

The imago appears in June and July, among trees and hedges, particularly Elm-trees, and occurs throughout the country; also in Scotland.

The pupa is black, with a subdued gloss; measures 3 lines, and the insect remains in this state about twelve days.

The larva is polyphagous, of a dull, dark olive-green colour, measures from 5 to $5\frac{1}{2}$ lines in length, sluggish, and when disturbed rolls itself up into a ball. Head hazel-colour, shining, black at the base and sides; labrum chestnut-colour; shield with a jet-black mark, shining, undulate in front, occupying nearly the whole vertex, and divided by a slender dorsal line; fore-margin whitish. The spots are round, small, elevated, and slightly white, with black centres, a hair springing from each. The anal segment with a large round, rugose, black shining patch, and a black spot above, at the base of each terminal proleg. On the twelfth segment is a transverse row of oval, whitish spots.

4. *Virgaureana*, Treits. Alis anticis albido-cinereis; fasciis tribus fuscis, nigro-punctatis, aliquando anteriori abbreviata; posticis pallide fuscis. ♂ Exp. al. 7-8 lin.

Head dusky drab, irrorated with pale grey. Face slightly paler than the head. Eyes black. Palpi as long as the head, dusky drab, pale drab beneath, at the base. Antennæ fuscous grey. Thorax dusky drab; darker and tufted behind. Patagia dusky drab, irrorated with grey, slightly paler than the thorax. Anterior wings dull, grey or greyish-drab, with fuscous markings streaked and freckled with umber. Near the base is a very angulated, curved, abbreviated fascia, which sometimes attains the dorsal margin. At the middle of the costa commences a broad, distinct, uninterrupted, oblique, angulated fascia, most defined on its inner edge, and nearly reaching the anal angle. The apical region is more or less occupied by another fascia dilated at the costa, and enclosing a pale space thereon, diminished and produced towards the anal angle; the apical margin fuscous. The pale portions of the wing and the markings much freckled with umber, the latter streaked at the edges with the same colour. Apical scales fuscous; cilia pale fuscous, both with grey tips. Posterior wings fuscous, with the base greyish. Marginal scales fuscous, with paler bases. Cilia pale fuscous. Abdomen fuscous; the caudal tuft dusky ochreous. ♀ Exp. al. $7\frac{1}{2}$ - $8\frac{1}{2}$ lin. Anterior wings rather more distinctly marked than in the ♂. Abdomen with the caudal tuft ochreous.

A very common species, but less abundant than *C. subjectana*; variable in size, and a little so in the intensity of the colouring. Allied to, but distinguished from, *subjectana*, by its darker and more speckled anterior wings.

The imago appears in June and July throughout the country; also in Scotland and in Ireland.

The pupa is 3 lines in length, and of a chestnut-brown colour.

The larva is polyphagous, of a dull chocolate-brown colour, and has a very shining brown head, with darker markings. When full-grown, it is about 7 lines in length, and before assuming the pupa state it spins a dead-white web, uniting the leaves of the food-plant.

5. *alternella*, Schiff. Alis anticis albidis, aut cinereis; basi apice-que fasciis abbreviatis, medio altera interrupta, fuscis, nigro punctatis; posticis fuscis, basi dilutioribus. ♂ Exp. al. $7\frac{1}{2}$ –8 lin.

Head drab. Face paler. Eyes black. Palpi as long as the head, drab, paler beneath. Antennæ dark drab. Thorax dusky drab; darkest in front. Patagia same colour as the thorax; the apices pale. Anterior wings dull, varying from very pale drab, inclining to cream-colour, to grey, with fuscous markings, speckled with umber. The base slightly tawny, near which is an abbreviated fascia, which proceeds two-thirds towards the dorsal margin, angulated on both sides, and constricted in the middle. At the middle of the costa commences a broad, oblique, irregularly-shaped, angulated fascia, which attains the dorsal margin towards the anal angle; this fascia is widest at its origin, it is constricted on its posterior edge before the middle; after which it dilates, and then narrows to the dorsal margin, before attaining which, it is very frequently interrupted. Towards the apex, on the costa, is an irregularly-trigonate patch, more or less developed and defined in different specimens. In the middle of the apical margin are several small fuscous patches, edged anteriorly with umber. The pale portions of the wing streaked faintly with fuscous. Apical scales drab, tipped with umber. Cilia dusky, or fuscous grey, tipped with dirty white, or pale grey. Posterior wings pale grey, with a slightly pearly lustre, and merging into pale fuscous at the apex. Marginal scales pale fuscous, the bases pale. Cilia pale, fuscous drab. Abdomen pale grey; the apex luteous. ♀ Exp. al. 9–9½ lin. Anterior wings marked like those of the ♂, but the markings more defined.

Less common than either of the preceding. In appearance resembling *C. subjectana*, but is much larger, and the central fascia not so evident towards the dorsal margin.

The imago appears in June and July, and occurs at various places round London; in Devonshire, the New Forest, in Worcestershire, Cheshire, &c. In some places commonly, especially at Margate. It likewise occurs in Ireland.

6. *pascuana*, Hüb. Alis anticis nitidis, cinereis, basin versus fascia angusta angulata, medio altera, apice macula fuscis; posticis fusco-griseis. ♂ Exp. al. 7-8 lin.

Head and face dull cinereous. Eyes black. Palpi as long as the head, cinereous, sometimes drab. Antennæ fuscous. Thorax and patagia dull cinereous. Anterior wings glossy, cinereous, with fuscous markings. Near the base is a narrow, angulated fascia, darkest towards the costa, and attaining the dorsal margin. At the middle of the costa is an oblique, irregular fascia, which reaches the anal angle; at the apex is a fuscous cloud. Apical scales fuscous, with drab bases. Cilia paler. Posterior wings and marginal scales fuscous grey. Cilia drab. Legs dull, straw-colour. Abdomen fuscous; the apex subochreous. ♀ Exp. al. $7\frac{1}{2}$ - $8\frac{1}{2}$ lin.

Not a very common species, and tolerably constant in size and markings. It much resembles *C. alternella*, but is distinguished from it by the basal fascia being entire and attaining the dorsal margin. The anterior wings are more elongate than in either that species, *C. subjectana*, or *C. Virgaureana*.

The imago appears in July, and occurs round London; in the neighbourhood of Box Hill, in Cheshire, &c. It is not uncommon near Dublin.

7. *sinuana*, Steph. Alis anticis cinereis, basi fascia curva, medio altera obliqua angulata, macula ad apicem costalem, fuscis, brunneo punctatis; in medio nebula indistincta subaurea; posticis griseis. ♂ Exp. al. $8\frac{1}{2}$ -9 lin.

Head drab. Face slightly paler. Eyes black. Palpi longer than the head; above and at the sides dusky drab, paler beneath and between. Antennæ grey. Thorax and patagia dusky drab. Anterior wings glossy, pale grey, with a slight fuscous tinge. The base is clouded with pale fuscous, followed by a very curved and angulated fuscous fascia, with a golden tinge, and edged with umber, widest at its origin, narrowing to the angle, then narrowing still more to its termination. At the middle of the costa is a paler and less distinctly-defined, oblique, angulated fascia, sometimes interrupted before reaching the anal angle, and having in the middle a dull golden cloud, clearly visible when viewed obliquely. Between the central fascia and the apex is a fuscous cloud, more or less suffusing the apical region. Apical scales fuscous, with the tips hoary. Cilia pale fuscous grey. Posterior wings pale fuscous, lighter at the base. Marginal scales fuscous, with luteous bases. Cilia paler. Abdomen fuscous grey, the caudal tuft inclining to ferruginous. ♀ Exp. al. 10- $10\frac{1}{2}$ lin. Anterior wings darker and more distinctly marked than in the ♂.

Somewhat rare; of the size of *C. octomaculana*, but with the

ground-colour of the anterior wings the same as in *C. alternana*. It is distinguished from its congeners by the *clearly-formed, curved fascia at the base, but more particularly by the dull, golden-coloured flush in the middle of the anterior wings.*

The imago appears in June and July. It occurs at Darenth and West Wickham Woods, not uncommonly at Blandford in Dorsetshire, at Clevedon in Somersetshire, and also in Essex.

8. *conspersana*, Doug. Alis anticis cretaceis, basi medio apiceque cinereo irroratis; posticis albidis. ♂ Exp. al. 8-10 lin.

Head and face white. Eyes black. Palpi white, longer than the head. Antennæ very pale fuscous. Thorax and patagia white, irrorated with black scales. Anterior wings dull, white, thickly irrorated with dusky scales at the base, at the middle and beyond; towards the apex assuming the form of fasciæ. Apical scales cream-coloured, mixed with fuscous. Cilia same colour, but immaculate. Posterior wings cream-colour, clothed with coarse, pale fuscous scales. Marginal scales and cilia cream-colour, the former with the tips fuscous. Legs straw-colour. Abdomen glossy, cream-colour; the apex inclining to ochreous. ♀ Exp. al. 8-10 lin.

A common insect on the coast, tolerably constant as to size and in the ground-colour of the anterior wings, but the markings are subject to much variation. Sometimes they are wholly void of markings, and with only a few dusky scales sprinkled over the surface; at others, more thickly so, disposed somewhat in the character of markings; at others, pale markings appear, faintly, but defined, and not unfrequently specimens *do* occur with the markings both dark and distinct: in these latter instances they very much resemble pale specimens of *C. octomaculana*.

The imago appears in June and July, and occurs at Dover, St. Osyth's in Essex, at Ventnor and Freshwater in the Isle of Wight, in Gloucestershire, and other places in the south.

The larva appears to be polyphagous, having been bred from heads of Groundsell (*Senecio vulgaris*), the Mouse-ear, Hawk-weed (*Hieracium pilosella*), Wild Marjoram, Thistles, and various other plants.

9. *octomaculana*, Haw. Curt. Alis anticis niveisve griseis; basi fascia curva, medio altera obliqua abbreviata, macula costali postica, altera ad angulum analem fuscis, brunneo-marginatis vel maculatis; margine apicali punctis brunneis; posticis fusco-griseis. ♂ Exp. al. $9\frac{1}{2}$ - $10\frac{1}{2}$ lin.

Head drab, hoary on the vertex. Face dull drab. Eyes intense brown. Palpi longer than the head, dark dusky drab; slightly paler beneath, pale drab between. Antennæ fuscous. Thorax in

front fuscous, on the vertex hoary, the crest tipped with fuscous. Patagia fuscous, mixed with hoary scales. Anterior wings dull, white, with fuscous markings, speckled with umber, chiefly on their anterior edges. The base, particularly on the costa, irrorated with fuscous, followed by an abbreviated, curved, and angulated fascia, extending beyond the middle, where it is abruptly terminated. At the centre of the costa commences another abbreviated, oblique, and broader fascia, most distinct anteriorly, and slightly dilated at its origin; it extends beyond the middle of the disk, and points to a faintly-marked, somewhat triangulate patch, on the dorsal margin. On the subapical portion of the costa is a conspicuous, irregular patch, enclosing a pale space on the margin, and is preceded and succeeded by a small spot. The apical region is spotted with umber and fuscous; the pale portions of the wing finely and slightly freckled with pale umber. Apical scales dull, white, tipped with umber. Cilia glossy, fuscous grey, tipped with white. Posterior wings clothed with coarse, dark grey scales, on a shining pale grey ground. Marginal scales glossy, fuscous grey, with paler bases. Cilia pale grey, glossy. Abdomen clothed with long, dusky, drab scales; the caudal tuft tawny. ♀ Exp. al. $10\frac{1}{2}$ –11 lin. Anterior wings with the markings darker, wider, and more spotted, and the freckling of the pale portions somewhat in wavy lines. The tuft at the apex of the abdomen ochreous.

Rather a common species, but confined to the north of England and Scotland; it varies a little in size and very much in the colour of the markings. In the typical insect the ground-colour is white, which merges into grey, and the markings more or less intense, ranging from fuscous to umber. It resembles *C. penziana*, but *its wings are not so long*, nor are the markings so defined nor so oblique; nor does the central fascia so uniformly attain the anal angle. There is one variety assigned to this species, in which the ground-colour is dark grey, with the markings less distinct and defined, and partaking much of the appearance of *C. alternana*.

The imago appears from July to September, and seems attached to the coast. It likewise is taken in North Wales, but the specimens from that locality are somewhat paler than ordinary.

According to Mr. R. Shield, the larva feeds in Thistles, but more especially the common Sow Thistle (*Sonchus arvensis*). It is also reputed to feed upon Wood Sage (*Teucrium Scorodonia*).

10. **Penziana**, Thunb. Alis anticis niveis, aliquando cinereo irroratis; fasciis tribus irregularibus atris; posticis nitidis albidis. ♂ Exp. al. $10\frac{1}{2}$ – $12\frac{1}{2}$ lin.

Head white, slightly yellow behind. Face dirty white. Eyes black. Palpi longer than the head, white above and between, dusky grey at the sides and beneath; apical joint dusky, with the tip white. Antennæ glossy, fuscous. Thorax and patagia white, banded transversely with dusky grey, the crest marked anteriorly with grey. Anterior wings dull white, with smoky black markings, speckled and edged with black; the base, especially on the costa, speckled with black, followed by a very angulated fascia, widest to the angulation at the middle, from thence receding and diminishing to the dorsal margin, which it does *not always* attain; at the middle of the costa commences a broad fascia, angulated on both sides, widest at its margin, diminishing to the middle, then curving and slightly receding to the dorsal margin, within the anal angle; this fascia encloses a small white space on the costa, and is followed by another, in shape something like the map of North and South America; the apex and apical margin speckled with smoky black. The pale portions of the disk slightly streaked and speckled with black. Apical scales dull white, alternated with patches of black. Cilia slightly glossy, grey, with pale bases and hoary tips. Posterior wings glossy, very pale grey, darkest towards the margins. Marginal scales and cilia white. Abdomen clothed with pale buff scales, the caudal tuft pale primrose-colour. ♀ Exp. al. 11–13 lin. Markings of the anterior wings broader and more distinct than in the ♂.

The largest known British species, and, except *C. cinctana*, the most distinctly marked. It is most like *C. octomaculana*, but considerably larger, and the anterior wings are narrower, *the markings more numerous*, blacker, and more oblique. In the typical insect (*vide* Curt., B. E., pl. 100), the ground-colour is white. There is a beautiful variety taken plenteously by Dr. Colquhoun at Ardrossan, which has the ground-colour grey, but the markings are the same.

The imago appears in July, and may be taken in the day-time sitting on the faces of rocks. It is entirely a Northern and Scotch species. It occurs in North Wales; also at Torwood, Ardrossan, and in the vicinity of Edinburgh.

11. **nubilana**, Hüb. Alis anticis nigro-fuliginosis strigis punctisque saturationibus; posticis aureo-brunneis. ♂ Exp. al. $6\frac{1}{2}$ lin.

Head and face dull brown. Eyes black. Palpi as long as the head, dull brown, paler beneath. Antennæ glossy, fuscous, alternated with grey. Thorax and patagia dull brown, with a slight grey irroration. Anterior wings slightly glossy, dusky bronze-brown, with

indistinct indications of darker markings, and with a fine irroration of grey scales, distributed somewhat in streaks, both before and behind the middle of the disk; the space between representing a central fascia, which is visible in some directions; dusky speckles or wavy transverse streaks are disposed over the whole surface. Apical scales and cilia dark iron-grey, with pale grey tips; in some lights these are of the same colour as the wings. Posterior wings and marginal scales rich bronze-brown, the latter with the bases paler. Cilia iron-grey, with a fuscous tinge. Abdomen bronze-brown, the caudal tuft fuscous. ♀ Exp. al. $6\frac{1}{2}$ lin.

A very common species; not to be mistaken for any other of this genus, but is *not unlike* *Carpocapsa funebrana*.

The imago appears in June and July, flying among Hawthorn, Maple, &c., in hedges, woods, meadows, &c. It occurs throughout the country.

Genus III. ABLABIA, HÜB., STEPH.

Palpi much longer than the head, remote, ascending; basal joint elongate, curving upwards, truncate; apical slender, curving downwards, longer than the basal; middle slender, thickened beyond the centre, ascending, twice as long as the apical. Thorax ovate, trigonate, behind. Anterior wings; in length considerably more than twice the width. Costa nearly straight; apex acute. Apical margin very oblique, slightly concave; dorsal margin more rounded than the costa. The costal vein attains the margin at the middle; subcostal nervures not equidistant. The discoidal cell situated towards the middle of the wing, but not extending two-thirds its length, widest at the insertion of the submedian nervure. Posterior wings elongate; apex obtuse. Apical margin concave, dorsal margin entire; basal angle produced. Abdomen slender, tufted in both sexes.

The only known British species is remarkable for the satiny appearance of the anterior wings: in colour it approaches *Sphaleroptera* on the one hand, and by the slightly deflexed position in which the wings are held in repose, it assimilates with *Cnephasia* on the other. In its flight it resembles the *Crambi*, flying for short distances only, keeping close to the ground. Unlike *Sphaleroptera*, it affects high, dry soil, being found mostly in chalky districts. The larva is supposed to feed in the roots of low herbage.

1. *pratana*, Hüb. Alis anticis nitidis; griseo-fulvis maculis sparsis brunneis; posticis griseis. ♂ Exp. al. 9-10 lin.

Head tawny drab, sometimes dusky ochreous. Face tawny drab,

inclining to grey. Eyes intense purplish brown, with a velvety appearance. Palpi longer than the head, dusky drab; paler beneath, at the base. Antennæ grey. Thorax tawny drab. Patagia sometimes paler than the thorax. Anterior wings very glossy, tawny drab, inclining sometimes to brown; towards the middle of the disk, placed longitudinally, are two conspicuous brown spots, that nearest the apex being the larger; these spots are more or less developed in different specimens, and are almost invariably present. Frequently the disk is freckled over with smaller brown spots, particularly in the sub-apical region, which is sometimes thickly studded with them. The costa pale, especially towards the base. Apical scales pale grey. Cilia whitish. Posterior wings glossy, pale grey, with a violet tinge. Marginal scales slightly fuscous, bases paler. Cilia whitish, very glossy. Abdomen shining grey; the caudal tuft ochreous drab. ♀ Exp. al. 9-10 lin.

An exceedingly abundant insect, tolerably constant in size and colour, but variable as to the greater or less presence of spots on the anterior wings; some specimens are nearly immaculate, in others the spots are very numerous. The nearly immaculate ones are the *Cnephasia Cantiana* of Curtis.

The imago appears in July and August, and occurs near Dover, Mickleham, Box Hill, Betchworth Hill, Sanderstead, Stoa's-Nest, and other localities on the chalk; also in Sussex, Yorkshire, Cheshire and other places. It occurs likewise in the vicinity of Edinburgh, and other places in Scotland. Also at Galway in Ireland.

FAMILY VIII. **SERICORIDÆ.**

More extensive than the preceding family, and presenting greater diversity of character in the imago, but scarcely less difficult of arrangement; many of the species in the principal genus (*Sericoris*), very closely resemble each other, and are, besides, subject to considerable variation, especially in the ground-colour of the wings. The costa is much arcuated, and in some genera the length of the anterior wings is more than twice their breadth, the anal angle mostly produced. In repose, these insects sit with their wings in a very deflexed position.

The larvæ, so far as known (except of *Orthotania*), feed in united or distorted leaves; some of them polyphagous.

The four genera comprised in this group are thus tabulated :—

A. Anterior wings <i>in all the genera regularly arcuated</i> in both sexes.	
a. Palpi with the <i>middle joint three times as long</i> as the apical	1. EUCHROMIA.
	2. ORTHOTÆNIA.
a a. Palpi with the <i>middle joint more than three times</i> as long as the apical	3. SERICORIS.
	4. MIXODIA.

Genus I. EUCHROMIA, STEPHENS.

Palpi much longer than the head, remote, ascending; basal joint moderately stout; apical slender, obovate, densely clothed with short scales, not so long as the basal; middle stout, thickened beyond the centre, clothed with long scales beneath, more than three times as long as the apical. Thorax robust, ovate. Anterior wings; length equals twice the width. Costa regularly arcuated; apex subacute. Apical margin straight, dorsal slightly rounded. The costal vein attains the margin near the middle; subcostal nervures equidistant, the discoidal cell lies towards the middle of the wing, not extending two-thirds its length, and widest at the insertion of the submedian nervure. Posterior wings ample, elongate; apex obtuse, apical and dorsal margins slightly concave. Anal angle produced. Abdomen long and slender, stoutest in the ♀, tufted in both sexes.

This genus is restricted, in the Museum Catalogue, to such species as have the anterior wings red or rose-colour; but as those in the second and third sections of the following table present no structural differences, we have thought it best to include them also; it is, however, doubtful if the section C will hereafter remain in its present position. The larvæ, for the most part, live in shrubs.

The six species comprised in this genus are thus arranged :—

A. Anterior wings <i>reticulated or streaked with crimson or rose-colour</i>	Species 1-3
B. Anterior wings with a distinct, but undefined central fascia, <i>fuscous in colour</i> , but no basal patch.	
a. With the <i>fascia abbreviated</i>	Species . 4
b. With the <i>fascia entire</i>	Species . 5
C. Anterior wings with a distinct, but undefined <i>central fascia, and a basal patch</i>	Species . 6

1. *Arbutella*, Linn. Alis anticis sordide purpureis, reticulatis; strigis nubilisque subcæruleis impositis; posticis griseis. ♂ Exp. al. 7 lin.

Head and face purplish brown. Eyes intense brown. Palpi longer than the head, purplish brown above, at the sides and at the apex; drab beneath. Antennæ grey. Thorax dull, dusky crimson. Patagia same colour as the thorax; the apices glossy. Anterior wings glossy, pale violet, with crimson markings. Near the base is an indistinct narrow fascia, most defined at the middle, and towards the dorsal margin. At the middle of the costa is another more distinct and broader-curved fascia, extending to the dorsal margin; beyond this is a streak from the costa to the anal angle; before attaining the latter it furcates, forming an inverted Y, followed by a broad streak dilating in the middle before the apex. The apex and apical margin more or less spotted and streaked with crimson. The costa is geminated throughout; those geminations beyond the middle, palest and most distinct. The pale or violet portions of the wing finely reticulated with iron-grey; the dorsal margin slightly fuscous. Apical scales crimson, with paler bases. Cilia drab, with the tips reddish; both paler towards the anal angle. Posterior wings and marginal scales bronze-brown, with paler bases. Cilia glossy drab. Abdomen dusky brown, with a violet tinge, the segments edged with fuscous scales; the caudal tuft somewhat fulvous, mixed with reddish.

Not uncommon in the north of England and Scotland, where the food-plant occurs. It is variable in size, and in the intensity of its colouring.

The imago appears in May and June among *Vaccinium* and *Myrica Gale*, and occurs in moors and boggy places.

The larva feeds on *Arctostaphylos Uva-ursi*.

2. *fulvipunctana*, Haw. Alis anticis sordide purpureis reticulatis; in medio fascia vix saturatori, strigis nubilisque subcæruleis impositis; posticis griseis. ♂ Exp. al. 8½ lin.

Head fuscous. Face rather darker than the head. Eyes black. Palpi longer than the head, dark fuscous, pale beneath. Antennæ pale grey. Thorax and patagia dull, claret-brown, with paler markings. Anterior wings slightly glossy, a pinkish ground thickly streaked and reticulated with dull crimson. Before the middle of the costa commences an irregular, interrupted fascia, dilating and indistinctly furcating towards the dorsal margin. Near the apex are two or three curved streaks, and at the apex itself is an eye-like spot. Apical scales dull crimson, paler at the anal angle, with pale bases. Cilia pinkish drab. Posterior wings glossy, pale grey, slightly fuscous at the apex. Marginal scales grey, with yellow bases. Cilia very pale fuscous. Abdomen grey, with the caudal tuft (which is

large), tawny. ♀ Exp. al. $8\frac{1}{2}$ –9 lin. In colours and markings similar to, but somewhat brighter than, the ♂.

A common species among its food-plant. Like the preceding, it varies in size and colour, but is much larger, being of the size of the following (*E. purpurana*), which being *so much paler*, can never be mistaken for this insect.

The imago appears in June and July, and occurs on moors and in boggy places, in the north and midland counties of England, and in Scotland. It emerges from the pupa before 6 A.M., and flies in the sunshine, and may be taken about 8 A.M.

The pupa state endures for about a month; some specimens which we bred, went into pupa on the 24th April, and came forth in the perfect state on the 29th May.

The pupa measures from $3\frac{1}{2}$ to 4 lines in length. The head, wing, and limb-cases chestnut-brown, and shining; abdomen paler and dull.

The larva feeds on *Myrica Gale* and *Vaccinium vitis idæa*. It is full-fed at the end of April. Its colour dark red; is fleshy, with a shining, black head. Its habit is to spin three or four of the terminal leaves together, bending one down over the web at the top—feeding on the interior part of their habitations; but it seems immaterial to them whether they eat the upper or under portion of the leaves.

3. *purpurana*, Haw. Alis anticis pallide ochraceis reticulatis, punctis strigulisque rosaceis; costa apiceque atomis cinereis; posticis pallide fusco-griseis. ♂ Exp. al. 9 lin.

Head and face drab. Eyes intense brown, with a velvety appearance. Palpi as long as the head; above drab, fuscous at the sides, beneath and between pale drab. Antennæ glossy drab. Thorax and patagia rosy drab; the latter paler at the apex. Anterior wings dull pinkish drab, irrorated with grey, and finely streaked with rose-pink. The costa pale, and streaked throughout; beyond the middle, in the geminated form. Apical scales rose-pink, with pinkish drab bases. Cilia pale rose-pink. Posterior wings and marginal scales pale fuscous grey, the latter with cream-coloured bases. Cilia cream-colour. Abdomen: the basal segments pale grey, the remainder iron-grey; a yellow caudal tuft at the apex. ♀ Exp. al. 9 lin. Colour more rosy than in the ♂.

Not a common species; it does not vary in colour. Of the size of, and similar to, *E. fulvipunctana*, but much paler.

The imago appears in June and July, and occurs nearer London than either of the preceding. It has been captured at Selsdon, Coombhurst Hill, near Croydon, Sanderstead, at West

Wickham Wood and Box Hill; at Lewisham, coming to light; also in Gloucestershire, at the Dyke at Newmarket Heath, and other places. It occurs also in Scotland.

4. *Ericetana*, Bentley. *Alis anticis pallidis, nubilis strigisque fuscis; medio fascia undulata, angulo anali striga, saturatoribus; posticis fuscis.* ♂ Exp. al. 6-7 lin.

Head pale ochreous drab. Face fuscous. Eyes dark brown. Palpi longer than the head, drab. Antennæ drab. Thorax and patagia drab, inclining to ochreous. Anterior wings dull drab, much speckled and marked with fuscous. The costa geminated throughout, the interspaces fuscous, the dorsal margin maculated, and the basal and apical regions streaked and clouded with fuscous. At the middle of the dorsal margin commences an undulating, broad, abbreviated fascia, of an ochreous fuscous tinge, which reaches three-fourths across the wing; a similar-coloured streak arises at the anal angle. Apical scales fuscous, drab at the tips. Cilia subochreous. Posterior wings dull, fuscous. Marginal scales fuscous, with drab bases. Cilia ochreous drab. Legs straw-colour. Abdomen glossy, pale fuscous; caudal tuft subochreous. ♀ Exp. al. 8-9 lin.

A rare species; slightly variable in the intensity of its colours, and distinguished from the following species (*E. striana*), by the *central abbreviated fascia*. It occurs at Shanklin in the Isle of Wight, in Gloucestershire, and at various places on the coast.

The imago appears in July.

5. *striana*, Schiff. *Alis anticis albidis, cinereis vel subferrugineis, fusco-strigulatis; basi, medio apiceque brunneis; posticis griseis.* ♂ Exp. al. 7-10 lin.

Head and face pale brown, or drab. Eyes black. Palpi longer than the head, brown or drab, paler beneath. Antennæ drab, sometimes brown. Thorax and patagia dull brown, the latter paler at the apex. Anterior wings dull drab, sometimes inclining to pale ochreous brown, finely streaked all over with transverse wavy chocolate-coloured lines. In the middle is an irregular, slightly oblique fascia, dilating posteriorly with undefined edges of chocolate-colour, darkest at, and towards the costa, on its anterior edge. From near the anal angle proceeds a distinctly-marked, but paler streak, *meeting, and sometimes joining to*, another short oblique one originating at the apex. The costa streaked throughout with drab, the interspaces chocolate; the streaks beyond the middle being geminated, and five in number. Apical scales chocolate-colour, with drab bases. Cilia glossy, drab, paler at the anal angle. Posterior wings glossy, fuscous grey. Marginal scales fuscous, with pale bases. Cilia very glossy, cream-colour, with a fuscous line in the middle. Abdomen fuscous, the caudal tuft paler.

A common species ; variable in size, and especially so in colour. The ground-colour ranges from pale drab to dull ferruginous, or subochreous. The ♀ is extremely rare in cabinets, and is very much smaller than the ♂.

The imago appears among mixed herbage in July and August, and occurs at Darenth and Coombe Woods ; at Hertford, Ripley ; at Sanderstead, Stoat's Nest, and other Downs south of London.

6. *Branderiana*, Linn. Alis anticis favillaceis ; fascia lata basi alteraque media cinereo-fuscis ; posticis cinereo-fuscis. ♂ Exp. al. 11-13 lin.

Head dull, ash-coloured in front, with an ochreous tinge behind. Face dull, ash-colour, palest below. Eyes black. Palpi as long as the head, dull, ash-colour, fuscous at the apex. Antennæ dull, ash-colour, fuscous beneath. Thorax and patagia dull, ash-colour. Anterior wings dull, ash-colour, with the base and fascia beyond, pale fuscous. The costa maculated throughout towards the apex, the maculations disposed in pairs ; the basal patch occupies one-fourth the length of the wing ; *very slightly streaky* ; the central fascia angulated on both edges, and dilated at the dorsal margin, on which, near the anal angle, is a dark brown, sometimes blackish, quadrate patch ; the pale portions of the wing and apical margin streaked and maculated with brown. Apical scales fuscous, with dull, drab bases. Cilia similar, but paler. Posterior wings very pale grey, clothed with coarse fuscous scales, slightly darker at the margin. Marginal scales fuscous, with pale drab bases. Cilia very pale drab at the apex, grey at the anal angle. Abdomen pale ashy grey, the caudal tuft paler, with a luteous tinge. ♀ Exp. al. 12-13 lin. Anterior wings in colour and markings like those of the ♂, but a little more dilute. Posterior wings with deeper fuscous scales.

This species varies considerably in the ground-colour of the anterior wings, also much in size, as well as in the intensity of the markings. It is far from common.

The imago appears at the end of June, and beginning of July. It occurs at the New Forest, Hants ; Ardley Wood in Essex ; in Worcestershire ; among Aspens and Poplars, on which trees the larvæ feed.

Genus II. *ORTHOTÆNIA*, STEPHENS.

Palpi twice as long as the head, remote, ascending ; basal joint stout, truncate ; apical minute, obovate, as long as the basal ; middle densely clothed with long scales, thickest beyond the centre ; more than three times as long as the apical. Maxillæ shorter than the palpi. Thorax moderate, ovate. Anterior wings : in length more than twice the width ; costa regularly arcuated ; apex obtuse ;

apical margin truncate, slightly oblique; dorsal margin very slightly rounded. The costal vein reaches the margin at the middle; subcostal nervures equidistant. The discoidal cell lying in the upper half of the wing, and not proceeding two-thirds its length; widest at its apex. Posterior wings ample; apex obtuse; apical margin rounded. Abdomen tufted in both sexes; long and slender in the ♂; stoutest in the ♀.

The only species remaining in this genus is associated in the Museum Catalogue with the insects in sections B. and C. of the preceding group, and, by itself, seems altogether out of place. Although decidedly distinct from *Ablabia*, there are, nevertheless, some points of analogy which lead in that direction. The subterranean habit of the larva of *Orthotenia antiquana* induces to this opinion; for, notwithstanding the larva of *Ablabia* is unknown, we expect its habit is similar. Time will show.

1. *antiquana*, Hüb. Alis anticis albidis vel cinereo-fuscis, maculis discoideis longitudinalibus fuscis; posticis griseis. ♂ Exp. al. $9\frac{1}{2}$ lin.

Head and face drab. Eyes black. Palpi longer than the head, drab, paler beneath. Antennæ fuscous. Thorax and patagia drab. Anterior wings dull, pale drab, with fuscous clouds and markings. Costa streaked with drab in the geminated form; the interspaces fuscous; the dorsal margin finely marked with the latter colour. Near the base, at the middle, is a slightly-dilating, not very clearly-defined, pale fuscous patch, succeeded by another larger, darker, and sharply-marked one, of obtuse triangular form, with its base towards the costa; beyond this, and towards the anal angle, is another mark, in colour similar to the basal one, which, with a broad distinct streak, originating on the apical margin, proceeds towards the costa, and meets a suffused cloud of fuscous grey colour coming from the apex. All these marks are edged with whitish scales. Apical scales fuscous grey. Cilia drab. Posterior wings and marginal scales pale fuscous; the latter with the bases paler. Cilia drab. Abdomen pale fuscous. ♀ Exp. al. $9\frac{1}{2}$ lin.

An uncommon species; tolerably constant in size, but very variable in colour, and in the intensity of its markings.

The imago appears in June and July, and occurs at Darent, Ripley, in Norfolk, Cambridgeshire, Gloucestershire, and Cheshire; also in Scotland, at Kilmun, and in the vicinity of Edinburgh.

According to Colonel Goureau, in the 'Annales de la Société Entomologique de France' for 1851, p. 233, &c., the larva is represented as feeding in the roots of *Stachys arvensis*, undergoing its transformations therein. It is white, with a chestnut-brown head; the mandibles and labrum blackish brown.

Genus III. SERICORIS, TREIT.

Palpi longer than the head, remote, ascending; basal joint elongate, drooping, pyriform, truncate; apical minute, elongate, egg-shaped, two-thirds as long as the basal; middle stout, thickened beyond the centre, more than three times as long as the apical. Maxillæ longer than the palpi. Thorax slender, ovate, usually simple, but sometimes with a small tuft behind. Anterior wings: length equals twice the breadth; costaregularly arcuated; apex acute; apical margin very slightly concave; dorsal margin slightly rounded. The costal vein reaches the margin at the middle; subcostal nervures usually equidistant. The discoidal cell lying towards the middle of the wing, and not proceeding two-thirds its length; widest at its apex. It receives (in *S. conchana*) an internal nervure inserted between, and towards, the second subcostal nervure, and passing to the apical vein between the first and second apical nervures. Posterior wings ample; apex obtuse; apical margin concave; dorsal margin entire. Abdomen long, slender, rather stouter in the ♀; tufted in both sexes.

This is an extensive and a puzzling group of insects (even when considered as regards the British species only, but particularly so when viewed relatively to the Continental ones), and, as at present constituted, will doubtless have to be modified, when we are better acquainted with the larvæ. Several of the species have been repeatedly bred, but no one has sufficiently observed either the larvæ or their habits, to speak with any confidence about them. The colouring of some of these insects is particularly rich, but the brilliancy is very liable to fade in cabinet specimens, which soon become dull.

The British species amount to twelve in number, and are thus tabulated:—

A. Anterior wings with <i>the edges of all the fasciæ and markings sharply defined</i>	Species	1
B. Anterior wings with <i>the principal markings slightly suffusing, and with a small white or silvery-lustred spot on the posterior edge of the central fascia towards the costa</i>	Species	2-4
C. Anterior wings with <i>the markings very suffused in the ♂, sharp and distinct in the ♀</i>	Species	5
D. Anterior wings: <i>the markings slightly suffusing, and the central fascia without the small white or silvery-lustred spot on its posterior edge</i>	Species	6-9
E. Anterior wings with <i>a broad pale ochreous or yellow space succeeding the basal patch</i>	Species	10, 11
F. Anterior wings with <i>a broad, slightly-oblique, nearly isometric fascia in the middle</i>	Species	12

1. **conchana**, Hüb. Alis anticis rufo-cinereis, fusco-strigatis; fasciis tribus maculaque dorsali, ante angulum analem, aureo-brunneis; costa strigis albidis geminatis; posticis griseis. ♂ Exp. al. 8-8½ lin.

Head and face dull brown, the former palest behind. Eyes black. Palpi as long as the head, fuscous, paler at the base above. Antennæ fuscous. Thorax fuscous, banded with deep brown. Patagia: at the shoulder deep brown; apices and margin pale. Anterior wings glossy, drab, or rich cream-colour, with chocolate-brown markings. At the base is a streaky, mottled patch, extending one-fifth along the costa, and nearly a third along the dorsal margin; its posterior edge obtusely angulated in the middle. Before the middle of the costa commences an irregularly-shaped fascia, which terminates at the middle of the opposite margin; its inner edge is tolerably straight, but posteriorly it dilates, and is produced into two sharp angles; its origin and termination of equal breadth. At the anal angle is an obtuse conical patch; above the anal angle, and originating upon the apical margin, is a broad band proceeding obliquely towards the costa, slightly dilating towards its apex. On the costa are six geminations with chocolate interspaces: two before the central fascia, which are clearly produced in lustrous streaks to the dorsal margin; the other four also lustrous and produced round the edges of the principal markings. The apex and pale portions of the wing suffused with pale ferruginous. Apical scales glossy, with umber tips, and drab bases. Cilia glossy, iron-grey at the apex; before and beyond the anal angle the interspaces drab. Posterior wings somewhat dull, pale grey, with a slight pearly tinge at the base, and merging into pale fuscous at the apex. Marginal scales and cilia glossy; the former fuscous, with paler bases; the latter dull, cream-colour, sometimes slightly fuscous. Abdomen pale fuscous, the caudal tuft tawny. ♀ somewhat smaller than the ♂, with the markings on the anterior wings darker.

A common species, and very variable in the intensity of its markings.

The imago appears in July, and flies at sunset; it occurs at Birch and Darenth Woods, Monkswood, Epping and New Forests; at Mickleham, and on the Downs beyond Croydon; in Gloucestershire, Cheshire, &c.; also at the Black Forest in Perthshire.

2. **lacunana**, Schiff. Alis anticis griseisve rufo-cinereis; fascia basi medioque obscure fuscis, nigro strigatis; apice altera olivaceo-fusca; costa strigis geminatis albidis; posticis griseo-fuscis, apice saturatoribus. ♂ Exp. al. 7-8 lin.

Head and face tawny, mixed with brown. Eyes dark brown. Palpi as long as the head, tawny, with the apex dusky. Antennæ

brown. Thorax tawny, banded with smoky black; a slight crest of black scales behind. Patagia smoky black at the base, the apex tawny. Anterior wings dull, pale drab, with umber-brown markings. At the base is a streaky and mottled patch, extending one-fourth along the costa, and rather more than one-third along the dorsal margin; its posterior edge wavy. At the middle is a broad fascia, with undefined and angulated edges, dilating widely after its origin on the costa, and more or less interrupted towards the middle by a pale longitudinal streak running nearly through it; posteriorly, on the dorsal margin, this fascia unites and suffuses with a similar-coloured patch within the anal angle. Above this latter is a broad, oblique, pale fuscous or tawny band, dilating towards its apex, and originating upon the apical margin. On the costa are six geminations with umber interspaces: two before the middle, and four beyond; those before are produced into undulating streaks to the opposite margin; those beyond merge into lustrous blue lines; the apical angle suffused with fuscous. Apical scales glossy, umber, with cream-coloured bases. Cilia glossy, dark brown at the apex, and near the anal angle; the interspaces cream-colour. Posterior wings dull, fuscous, with a greyish flush. Marginal scales glossy, fuscous, with straw-coloured bases. Cilia whitish. Abdomen fuscous grey, the caudal tuft tawny at the sides, blackish above. ♀ Exp. al. $7\frac{1}{2}$ lin. Anterior wings darker than in the ♂.

An abundant species; constant in markings, but slightly variable in the ground-colour of the anterior wings. Closely allied to *S. Urticana*, but slightly smaller; it is distinguished from that species by the *central fascia being divided longitudinally before the middle*, whereas in *S. Urticana* it is entire.

The imago appears in July, and is generally distributed throughout the country; it is also common in the vicinity of Edinburgh, and around Dublin. It flies among mixed herbage.

The larva is of a dark, brownish-black colour, with a black head; very active, is polyphagous, and may be met with, full-grown, in May and June.

3. *Urticana*, Hüb. Alis anticis rufo-cinereis, basi fascia medioque fuscis, brunneo vel nigro strigatis; macula versus angulum analem fasciæque obliqua fusco-olivaceis; costa strigis geminatis albidis; posticis griseo-fuscis. ♂ Exp. al. 10-10 $\frac{1}{2}$ lin.

Head dull brown. Face pale ochreous. Eyes black. Palpi as long as the head, drab above and beneath, dusky at the apex. Antennæ dull brown. Thorax tawny or drab, banded with black; a slight crest of dark scales behind. Patagia tawny, with a dark brown band at the base. Anterior wings dull, drab, with chocolate or umber markings. At the base is a streaky patch, extending about one-sixth along the costa, and nearly one-third along the dorsal margin;

its posterior edge undulated and obtusely angulated in the middle. Before the middle of the costa commences a broad fascia, which is slightly oblique; its anterior edge is usually undulate, but posteriorly it *dilates widely* soon after its origin; the dilation continues beyond the middle; at its termination the space occupied on the dorsal margin is narrower than at its outset, the dilated portion sometimes encompassing a small roundish drab space, but more frequently it is indented. Within the anal angle, on the dorsal margin, is a suffused brown conical patch paler than the central fascia; originating near the anal angle, on the apical margin, is a broad fuscous, or olive-drab band, which passes obliquely towards the costa, but seldom attaining it. On the costa are six wide, slightly lustrous geminations with dark brown interspaces: two before the central fascia, which are produced to the dorsal margin, where they are most conspicuous, the remaining four more or less produced; the apical spot distinct. The pale portions of the wing more or less suffused with fuscous, especially on the dorsal margin, which is also regularly maculated. Apical scales glossy, umber, with drab bases, paler at the anal angle. Cilia drab, with pale umber patches at the apex and towards the anal angle. Posterior wings fuscous grey. Marginal scales dark fuscous, with straw-coloured bases. Cilia straw-coloured. Abdomen dark, fuscous grey; the caudal tuft luteous. ♀ Exp. al. $7\frac{1}{2}$ –10 lin. Anterior wings richer in colour than in the ♂.

Exceedingly common; slightly variable in size. Closely allied to *S. lacunana*, but somewhat larger and paler, especially at the apex of the anterior wings, and the *central fascia is not divided longitudinally as in that species*.

The imago appears in June and July in hedges, &c., where Nettles and other low herbage abound; and occurs plentifully throughout England, and in Ireland.

The larva feeds on *Rubus Idæus* (the Raspberry), *Epilobium*, Nettles, and other plants.

4. *micana*, Hüb. Alis anticis griseis subargenteis; basi, fascia medio apiceque ochraceis vel aureo-brunneis, nigro-strigatis; posticis cinereis. ♂ Exp. al. 8 lin.

Head dull brown, paler behind. Face dull brown. Eyes dark brown. Palpi as long as the head; above and at the sides dusky brown, inclining to ochreous at the base, slightly paler beneath and between. Antennæ glossy, fuscous. Thorax and patagia dusky brown, the latter paler at the apex. Anterior wings dull, drab, with brown markings speckled with umber, and lustrous silvery spots and streaks. At the base is a brown patch, streaked transversely with umber, extending one-fifth along the costa, and one-third upon the dorsal margin, which it attains with an undulating edge. In the centre is a very broad fascia of similar character, with irregular and

undefined borders, somewhat dilated on the dorsal margin. At the apical margin is a paler cloud in the middle, nearly joined to the central fascia. The costa is marked with six pale, slightly silvery geminations, with brown interspaces, two before, and four beyond the middle. The two former unite, and are produced as a broadish lustrous streak to the dorsal margin; of those beyond the middle, the second one is produced interruptedly to the anal angle; the apical and subapical ones are also produced; the first may be traced in a series of dots irregularly placed, that at the middle of the disk being brightest, and of a bluish colour. Near the base, on the basal patch, is an indistinct, curved, lustrous streak, brightest on the costa. Apical scales dark brown, with drab bases. Cilia glossy, drab, speckled with iron-grey at the apex, and before the anal angle. Posterior wings with a subdued gloss, clothed with coarse dark fuscous scales upon a grey ground. Marginal scales glossy, paler fuscous; bases whitish. Cilia whitish, with a grey tinge. Abdomen glossy, dark grey; the caudal tuft drab. ♀ Exp. al. 8 lin.

An uncommon species; very variable, both in size and colour. The ground-colour ranges from pale drab to bright ochreous, and the markings from dark fuscous to umbreous. These latter sometimes suffuse the whole surface of the anterior wings. Very closely allied to *S. lacunana*, but *slightly larger in size*.

The imago appears in July and August, and occurs in the east of Norfolk, in Suffolk, and in the north of England. In Scotland it occurs rather freely on marshy ground.

5. *alternana*, Curtis. Alis anticis subochraceis, squamis nigris irroratis; posticis nitidis, umbreis pallidis, apice saturatoribus. ♂ Exp. al. 8 lin.

Head dull ochreous, mixed with black scales between the antennæ and behind. Face dull, ochreous above, whitish below, a transverse row of blackish scales in the middle. Eyes intense, purplish brown, with a velvety appearance. Palpi longer than the head; above and at the sides dull ochreous, drab beneath and between; the apex dusky. Antennæ alternated with drab and black; the basal joint clothed with dull ochreous scales above, and with shining pale drab scales beneath. Thorax dull ochreous, mixed with blackish scales, drab behind. Patagia similar to the thorax; the apex glossy. Anterior wings glossy, dull ochreous, thickly irrorated with blackish scales, which in the aggregate appear as forming a dusky cloud from the base to beyond the middle; darkest at its extremities, and extending on the dorsal margin to near the anal angle. On the apical margin is another dusky cloud. The costa towards the base is alternately marked with ochreous and black. Apical scales ochreous. Cilia grey. Posterior wings glossy, pale umber, slightly paler at the base. Abdomen glossy, dark grey; the caudal tuft pale ochreous.

♀ Exp. al. 6 lin. This sex is altogether different from the ♂ in appearance, being *very like a small brightly-marked S. laeunana*.

A Scotch species, and not occurring very abundantly; it was first captured by the late Richard Weaver, at the Black Forest, among Heath. The ♀ is exceedingly rare in cabinets. Both sexes are in the collections of Messrs. H. Doubleday and Edwin Shepherd.

6. *fuligana*, Hüb. Haw. Alis anticis albidis; macula basi, fascia media obliqua, altera ad apicem, brunneis; posticis fuscis, apice saturatoribus. ♂ Exp. al. 5 lin.

Head dull, dark drab. Face dull ochreous. Eyes black. Palpi as long as the head; above pale ochreous; apex and sides inclining to fuscous. Antennæ fuscous. Thorax drab. Patagia paler. Anterior wings dull, very pale drab, with umbreous markings. At the base, extending one-third along the costa, is a patch, with its posterior edge rounded and sharply defined; succeeding this, at the middle, is an oblique, broadish, undefined fascia, somewhat paler in colour; and beyond this again is a similar-coloured cloud, occupying the apical angle, and extending to the anal angle. On the costa are five geminations: one before, and four beyond the central fascia. Apical scales narrow, umbreous. Cilia fuscous, with drab bases. Posterior wings fuscous, slightly darker towards the margin. Marginal scales fuscous, with pale bases. Cilia whitish, inclining to straw-colour. Legs straw-colour, with the upper sides of the tarsi speckled with fuscous. Abdomen umbreous, the apex drab. ♀ Exp. al. 5 lin.

A rare species, and subject to considerable variations in the ground-colour of the wings.

The imago appears in July among Fleabane (*Inula Dysenterica*), and occurs in the Metropolitan district; in Norfolk; at Folkestone, and at Dawlish, in Devonshire.

7. *cespitana*, Hüb. Alis anticis rufo-ochraceis; fascia basi, altera medio angulata maculaque apicali brunneis, strigis costalibus pallidis geminatis; posticis fuscis. ♂ Exp. al. 7 lin.

Head chocolate-brown, paler behind. Face slightly paler. Eyes black. Palpi longer than the head, dusky brown, paler at the base above. Antennæ fuscous. Thorax and patagia dull brown; the latter paler at the apex. Anterior wings dull drab or cream-colour, with rich chocolate-brown markings and lustrous streaks. At the base is a patch, streaky and palish at its origin, extending one-fifth along the costa, and one-third along the dorsal margin; its posterior edge convex to beyond the middle, where it is angulated and indented; the central fascia is narrow at its origin and termination; its anterior edge oblique to an angle in the middle; pos-

teriorly it is dilated into two acute angles, one *before*, the other *beyond* the middle. Near the anal angle, on the dorsal margin, is an oblique, clearly-defined, conical patch, angulated anteriorly. At the apical margin, and likewise near the anal angle, is another longer oblique patch, dilated at its apex, and directed towards the costa. Apical spot elongated, and produced half-way down the margin. On the costa are seven lustrous, silvery geminations, with chocolate-brown interspaces, two before the central fascia, produced in silvery streaks to the opposite margin; those beyond the fascia are similarly produced along the edges of the markings. Marginal scales dull, chocolate-brown, with paler bases, especially below the produced apical spot. Cilia slightly glossy, fawn-colour, with a black patch at the apex, and before the anal angle. Posterior wings glossy, pale fuscous, with a bronze hue at the apex. Marginal scales fuscous, with pale ochreous bases. Cilia grey, with a fuscous tinge. Abdomen iron-grey, glossy; the caudal tuft ochreous drab. ♀ Exp. al. $6\frac{1}{2}$ –7 lin.

Not a common species.

The imago appears in June and July among mixed growth. It occurs at Mickleham and various places round London; in Devonshire, in the vicinity of Edinburgh and of Dublin.

8. **politana**, Haw. Alis anticis albidis, nitidis; fasciis tribus rufobrunneis; tertia interrupta; posticis fusco-griseis. ♂ Exp. al. 6–7 lin.

Head and face dull chocolate-brown, the latter sometimes paler. Eyes black. Palpi longer than the head, chocolate-brown above and at the sides, paler beneath. Antennæ chocolate-brown above, pubescent beneath. Thorax and patagia chocolate-brown, the former crested behind. Anterior wings glossy, white, with a silvery lustre, much marked and fasciated with rich chocolate-brown. At the base is a streaky patch, extending one-fourth along the costa and one-third along the dorsal margin, and its posterior edge forming an irregular angle, beyond the middle. Before the middle of the costa commences a broad fascia, having its anterior edge slightly undulate, but with its posterior border dilating widely, and ultimately attaining the dorsal margin near the anal angle. Midway between the central fascia and the apex is a second one, widest on the costa, and narrowing to a point at the anal angle; it is sometimes constricted in the middle, when it slightly resembles the map of North and South America; at others it is abbreviated, forming only a rounded patch upon the costa, followed by a few spots at irregular intervals. The apical portion of the wing has commonly a reticulated appearance. The apex, as well as the edges of the markings and fascia, speckled with umber; the pale or silvery portions of the wing streaked or maculated with dusky. Apical

scales glossy, mottled with chocolate-colour, iron-grey, and white, palest towards the anal angle. Cilia very glossy, fuscous, with a violet tinge. Posterior wings pale grey, with a subdued gloss, and merging into pale fuscous at the apex. Marginal scales fuscous, with pale bases. Cilia glossy, drab. Legs fuscous, the posterior pair palest. Abdomen clothed with long scales, dull chocolate-brown; the caudal tuft ochreous. ♀ Exp. al. $6\frac{1}{2}$ –7 lin.

A very variable species, both in colour and in the intensity of its markings.

The imago appears in June and July, occurring on Moors and Heathy places. It has been captured in Kent, Sussex, Devonshire, Cornwall, Lancashire, in the New Forest, and in the north of England; also in the vicinity of Dublin.

The larva feeds on *Myrica Gale*, the Sweet Gale.

9. *littoralis*, Curtis. Alis anticis rufo-cinereis aut subochraceis fusco-strigatis; fascia basi, altera medio maculaque apice irregulari brunneis; costa punctis apicalibus; posticis griseis, apice fuscescentibus. ♂ Exp. al. 7 – $7\frac{1}{2}$ lin.

Head and face dusky drab, sometimes ochreous. Eyes black. Palpi longer than the head, above and at the sides dusky brown; drab between and beneath. Antennæ grey, alternated with fuscous. Thorax in front iron-grey, mixed with whitish scales on the vertex; some shining, whitish scales behind. Patagia iron-grey at the base; the apex whitish. Anterior wings dull cream-colour, approaching pale ochreous, with rich brown fasciæ and markings. At the base is a patch, extending one-fifth along the costa, and about one-third along the dorsal margin, palest at its origin, but its colour darkest and most defined posteriorly, on the dorsal margin; its edge is oblique, and finely undulated to beyond the middle, where it forms an obtuse angle. At the middle of the costa originates a clearly-defined fascia, narrow at its commencement and termination, with its anterior edge first considerably convex, then equally concave; the posterior border dilates and undulates to the middle, and then recedes in the same manner, forming a sharpish truncate angle. In the apical region is a defined, squarish, pale patch, with a roundish similar-coloured spot on the apex. The costa and dorsal margins are finely spotted with umber, and on the former, beyond the middle, are three or four broadish quadrate spots, darkest on the margin. The pale portions of the wing more or less clouded or streaked with brown. Apical scales dusky ochreous, with a row of intense umber spots. Cilia dull, dusky ochreous, with drab bases, and becoming whitish at the anal angle. Posterior wings pale at the base, clothed with coarse, pale, fuscous scales, on a whitish ground. Marginal scales fuscous, with drab bases. Cilia whitish or pale straw-colour, slightly grey at the apex. Abdomen greyish, fuscous; the caudal

tuft pale ochreous. ♀ Exp. al. 7-7½ lin. Anterior wings marked like those of the ♂, but the colouring richer; posterior wings slightly darker at the margins.

Not a common species; variable in size and in the strength of the markings; the ground-colour of the anterior wings ranges from white to dull drab.

The imago appears in July and August, affecting the coast. It occurs in salt marshes at St. Osyth's in Essex; on the banks of the Thames below Gravesend; in the Isle of Wight, and other places.

The larva feeds on *Statice armeria*, Common Thrift.

10. **Euphorbiana**, Zell. Alis anticis ochraceis; basi fascia, altera medio indistincta obliqua; tertia apice abbreviata, brunneis strigatis; posticis ustulato-brunneis. Exp. al. 5-6 lin.

Head and face umbreous. Eyes black. Palpi as long as the head, umbreous. Antennæ deep brown. Thorax and patagia umbreous. Anterior wings ochreous, with umbreous markings. At the base is a dark brown patch, with darker transverse streaks; its posterior edge nearly straight. At the middle of the costa is an oblique indistinct fascia, dilating and attaining the dorsal margin. At the apex is a broad abbreviated fascia. On the costa before the middle is one gemination, which is produced into strigæ attaining the opposite margin; beyond, are three others, not produced. Apical scales brown. Cilia ochreous. Posterior wings and marginal scales smoky brown, the latter with the bases pale. Cilia fuscous. Abdomen umbreous.

A unique specimen of this insect is in the cabinet of Mr. Edwin Shepherd; it was taken many years ago by Mr. Bentley in the West of England. It is very closely allied to *S. latifasciana*, corresponding with it in size and colours, but may be readily separated from it by the *straight posterior edge of the basal patch*. This is a well-known and tolerably common species upon the Continent.

11. **latifasciana**, Haw. Alis anticis flavis, brunneo-strigatis; basi fascia, alteraque medio brunneis, nigro-strigatis; apice striga obliqua saturatori; nebulis subplumbeis impositis; posticis nigro-fuliginosis. ♂ Exp. al. 5-5½ lin.

Head: on the vertex umbreous, at the sides and behind yellow. Face yellow above, white beneath. Eyes black. Palpi as long as the head, white. Antennæ fuscous. Thorax umbreous. Patagia umbreous, speckled with ochreous. Anterior wings yellow, with streaky, brown markings. At the base is a well-defined patch, with its posterior edge rounded. On the costa, at the middle, commences a broad um-

breous fascia, clearly defined on its anterior edge, but suffusing posteriorly into the clouded apical portion. Above the anal angle, and originating on the apical margin, is a well-defined umbreous streak or fascia, which does not reach to the costa. Before the middle are two geminations, which are produced in streaks to the dorsal margin; beyond are three others, ochreous, more or less distinct. Towards the apex are a few leaden-coloured clouds. Apical scales black, with ochreous bases. Cilia ochreous, with a few black scales in the middle. Posterior wings and marginal scales smoky black; the bases of the latter dull drab. Cilia cinereous. ♀ Exp. al. 6–6½ lin. In colours richer than the ♂, and with the yellow space beyond the basal patch much brighter. Posterior wings with the cilia grey.

An uncommon species; allied to *S. Euphorbiana*, which it very much resembles, but is distinguished from it by the rounded posterior edge of the basal patch.

The imago appears in July and August, frequenting Oaks, &c. It occurs at Darenth Wood; near Tunbridge Wells, near Ripley, near Guildford; at Riddlesdown, at Blandford, in Dorsetshire; in the New Forest, and in Worcestershire.

12. *bifasciana*, Haw. Alis anticis pallide griseis vel albidis; basi fascia, medio altera cinereis fusco-strigatis; apice puncto fimbriaque fuliginosis; ante apicem nebula pallida ochracea; posticis fuscis. ♂ Exp. al. 6½ lin.

Head drab on the vertex, dull grey at the sides. Face drab. Eyes black. Palpi as long as the head, dull drab. Antennæ dull brown: basal joint clothed with drab scales. Thorax and patagia drab, with transverse bands of dusky scales. Anterior wings pale drab, with a yellowish tinge, and dark fuscous-grey markings. At the base is a patch extending one-fifth along the costa, and one-fourth along the dorsal margin; its posterior edge oblique, slightly and broadly convex in the middle. The central fascia is very broad, being equal nearly to one-third the length of the wing, having both its edges parallel with the posterior edge of the basal patch; posteriorly this fascia is slightly angulated, and not sharply defined. In the apical region is a roundish olivaceous drab, or pale ochreous cloud. The costa is marked with six geminations, two before, one on, and three beyond, the central fascia. The apical spot distinct, and a few dusky spots along the apical margin. Apical scales glossy, umber. Cilia iron-grey, paler towards the anal angle. Posterior wings dull, pale fuscous. Marginal scales glossy, fuscous, with pale bases. Cilia pale grey. Abdomen fuscous grey, with a large dull straw-coloured tuft at the apex. ♀ Exp. al. 6½ lin. Anterior wings with the markings more defined than in the ♂.

Somewhat rare in cabinets; tolerably constant in size and colour.

The imago appears in June and July, frequenting Fir-trees. It occurs at Darenth and West Wickham Woods, Mickleham, and other places round London.

Note.—In the Museum Catalogue, p. 73, is a species referred to this genus, under the name *herbana* of Guenée; and in the rich cabinet of Mr. Edwin Shepherd are several specimens bearing that specific name; but they do not agree with M. Guenée's description. Mr. Shepherd's specimens are of the same size as, and exceeding similar to, *S. lacunana*; but the ground-colour of the anterior wings is dark, cinereous, or smoky black. [Query; are these *distinct from lacunana, or merely varieties of that insect?*]

In the same Catalogue the late J. F. Stephens has inserted as British, a species under the name of *bistrigana*, on the authority of two examples in the Bentleyan cabinet (Mr. Edwin Shepherd's). Mr. Bentley obtained them from Mr. Stone. These specimens are said to be North American, and therefore not admissible into our lists.

GENUS IV. MIXODIA, GUENÉE.

Palpi longer than the head, remote, ascending; basal joint stout, truncate; apical slender, obovate, densely clothed with short spreading scales; not so long as the basal; middle stout, curving, thickened beyond the middle, densely clothed beneath with long scales; more than three times as long as the apical. Thorax slender, ovate. Anterior wings triangular; length twice the breadth; costa regularly, but slightly, arcuated; apex acute; apical margin subtruncate, rounded; dorsal margin rounded. The costal vein reaches to the middle of the margin. The subcostal nervures equidistant. The subcostal vein gives out an internal nervure towards the second costal nervure, which passes to the apical vein between the first and second apical nervures. The discoidal cell is widest towards its apex, and scarcely proceeds two-thirds the length of the wing. Posterior wings ample; apex obtuse; apical margin concave; dorsal margin entire; basal angle produced. Abdomen long, slender, tufted in both sexes.

This genus is established by M. Guenée for the reception of *M. Schulziana* and another species; but the separation from *Sericoris* seems needless, nor is there sufficient structural difference to warrant it. Nevertheless, his view is adopted here, until a knowledge of the preparatory states either restores it to its old position, or confirms the present one.

Two British species are associated in this genus, and are thus arranged :—

- A. Anterior wings with *numerous interrupted* silvery streaks Species 1
 B. Anterior wings with *two* (sometimes three) *silvery* streaks, mostly entire Species 2

1. **Schulziana**, Fab. Alis anticis ochreo-ferrugineis, strigis punctisque geminatis argenteis; ciliis albis nigro-punctatis; posticis griseis. ♂ Exp. al. $10\frac{1}{2}$ –12 lin.

Head chocolate-brown, sometimes mixed with ferruginous. Face slightly paler. Eyes black. Palpi as long as the head, brown above and at the sides, fuscous at the apex, dusky drab beneath and between. Antennæ fuscous. Thorax: in front chocolate-brown, sometimes banded on the vertex with umber. Patagia brown at the base, umber in the middle, and silvery drab at the apex. Anterior wings dull, rich ferruginous brown, speckled with umber, and with numerous silvery lustrous streaks. At the base is a patch extending one-third along the costa, and the same distance along the dorsal margin; its posterior edge indented beyond the middle. Before the middle of the disk is the central fascia, which is narrower at its termination than on the costa; its anterior edge somewhat concave and undulate; posteriorly it is obtusely produced, and at this portion marked with a round silvery spot. Beyond this fascia, on the dorsal margin, near the anal angle, is a broadish patch, more or less produced *towards* the costa, and meeting streaks proceeding from two similar, but smaller patches *on the costa*. An irregular oblique band passes across the apical angle; apical spot distinct. On the costa are from six to eight silvery-lustrous geminations, of which one or two are upon the basal patch; the remainder are more or less produced into silvery streaks between the principal markings. The apical margin is alternated with black on a brown ground, interspersed with white patches. Apical scales umber, sometimes alternated with drab. Cilia drab, alternated with fuscous grey, sometimes smoky black. Posterior wings pale grey, glossy. Marginal scales fuscous (sometimes straw-colour), with straw-coloured bases. Cilia straw-colour. Abdomen smoky black, the segments edged with silvery-lustrous scales; the caudal tuft shining, drab. ♀ Exp. al. $10\frac{1}{2}$ –12 lin.

A common insect in heathy places. Much resembles several species of the genus *Sericoris*, but distinguished by its larger size, and *more numerously streaked* anterior wings.

The imago appears in June and July, and occurs at Bagshot Heath, Weybridge; in Gloucestershire, Cheshire; on the Moors near Manchester, and in the north of England; abundant in Scotland. It flies in the afternoon.

2. *palustrana*, Lienig. Alis anticis ferrugineis, atro-punctatis; strigis punctisque costalibus argenteis; posticis fuliginoso-fuscis.
♂ Exp. al. $6\frac{1}{2}$ -7 lin.

Head varying from ochreous to red-brown. Face dark brown. Eyes black. Palpi longer than the head; above dusky brown (sometimes ochreous), at the sides dusky brown, beneath and between drab. Antennæ dark fuscous. Thorax reddish brown, speckled with umber. Patagia: at the base same colour as the thorax; the apex ochreous. Anterior wings dull, cream-colour, with ochreous or rich ferruginous markings and fasciæ speckled with black and lustrous streaks between. At the base is a patch, extending one-fifth along the costa, and one-third along the dorsal margin; its posterior edge clearly defined, convex to beyond the middle, and afterwards indented. The central fascia is broad and well-defined; its anterior edge is first concave, then convex; posteriorly it dilates suddenly, is sharply and deeply indented near the middle, and then contracts to the dorsal margin. At the anal angle is a conical patch, and the apical region is occupied by another larger patch or cloud. All these markings are much speckled with black, and the central fascia has two black streaks across it. The costa is black, and before the middle are two geminations, and four beyond, all lustrous; the first, second, third, and fourth, are produced to the dorsal margin, in wavy lustrous streaks between the markings. At the anal angle is another straightish, lustrous, geminated streak, reaching nearly half across the wing. On the apical margin are three or four dull, cream-coloured spots. Apical scales varying from pale to dark ferruginous brown, mixed with black, interrupted by white streaks at the anal angle. Cilia glossy at the apex, and broadly towards the anal angle and sometimes a patch or two between, iron-grey; the remainder white. Posterior wings dull fuscous, inclining to umber, darkest at the apex. Marginal scales umber; the bases straw-colour. Cilia grey at the anal angle, white at the apex, where there is an iron-grey patch. Abdomen blackish; the segments fringed with shining grey scales; the apex pale ochreous. ♀ Exp. al. $6-6\frac{1}{2}$ lin. Anterior wings marked as in the ♂, but more suffused, and the lustrous streaks not so defined.

A Scotch species. In general appearance much like *Sericoris cespitana*, but darker in colour, smaller in size, and the spaces between the markings narrower and more silvery.

The imago appears in May, June, and July among Fir-trees, occurring at the Black Forest in Perthshire; at Ambleside; in Torwood, Stirlingshire, and at Fochabers.

FAMILY IX. **LOZOPERIDÆ.**

Very many of the species, and sometimes whole genera in this family (*Lozopera*, *Xanthosetia*, *Dapsilia*), have the ground-colour of the anterior wings yellow; but their chief characteristic is that the principal fasciæ or markings take their *origin on the dorsal margin*, are very frequently abbreviated, and run in a direction more or less *parallel to the apical margin*. So generally, indeed, is this the case, at least in the known British examples of this group, that any species so marked may, without hesitation, be referred to it. In the previous families the reverse of this obtains; the fasciæ start *from the costa, and proceed in the direction of the anal angle*. *Except in Calosetia, the ocelloid patch is wholly wanting throughout the family.*

The length of the anterior wings is generally more than twice their width, in some species of the genus *Lozopera* more than three times; and in repose are held in a very deflexed position, as it were compressed from the sides, and the produced cilia at the anal angle, as in *Eupæcilia*, *Dipoltella*, and some other genera, give to those insects a peculiarly pinched-up appearance, posteriorly. The posterior wings are mostly of the various shades of grey, and not unfrequently very emarginate or incised below the apex.

The larvæ, so far as known (except *Dapsilia*), are internal feeders. The greater part, if not all, the larvæ of the extensive genus *Eupæcilia*, will probably turn out to derive their nourishment from seeds.

The following is the tabulation of the eleven genera contained in this division:—

- | | |
|---|-----------------|
| A. Posterior wings <i>acutely produced in the ♂</i> ,
and with the apical margin <i>concave in the ♀</i> . | |
| a. Palpi with the <i>middle joint three times as long as the apical</i> | 1. LOBESIA. |
| B. Anterior wings with the <i>costa nearly straight</i> ,
or only <i>slightly arcuated</i> . | |
| b. With the <i>upper surface of the anterior wings ornamented with tufts of elevated scales</i> . | |
| c. Palpi with the <i>middle joint five times as long as the apical</i> | 2. PHTHEOCHROA. |
| b b. With the <i>upper surface of the anterior wings not ornamented with tufts of elevated scales</i> . | |
| c c. Palpi with the <i>middle joint nearly three times as long as the apical</i> | 10. DAPSILIA. |

- | | | |
|--|---|------------------|
| <i>c c c</i> . Palpi with the middle joint three times
as long as the apical | } | 7. EUPECILIA. |
| <i>c c c c</i> . Palpi with the middle joint more
than three times as long as the apical | | 8. LOZOPERA. |
| <i>c c c c c</i> . Palpi with the middle joint four
times as long as the apical | } | 4. CHROSIS. |
| | | 3. ERIOPSELA. |
| | | 5. ARGYROLEPIA. |
| C. Anterior wings with the costa sensibly arcu-
ated or rounded. | | 11. ARGYRIDIA. |
| <i>b b b</i> . Anterior wings with the upper surface
with a slightly elevated ridge towards the
apex. | | |
| <i>c c c c c</i> . Palpi with the middle joint five
times as long as the apical | | 9. XANTHOSSETIA. |
| <i>b b b b</i> . Anterior wings with the upper surface
without a slightly elevated ridge towards
the apex. | | |
| <i>c c c c c c</i> . Palpi with the middle joint four
times as long as the apical | | 6. CALOSETIA. |

Genus I. LOBESIA, GUENÉE.

Palpi longer than the head, porrected horizontally, remote, diverging; basal joint stout, curved, isometric, truncate, drooping; apical slender, obovate, slightly longer than the basal, horizontal; middle ascending, curved, thickest beyond the middle, more than three times the length of the apical. Maxillæ slender, longer than the palpi. Thorax robust, ovate, with a small tuft or crest behind. Anterior wings: in length considerably more than twice the width; costa slightly arcuated; apex acute; apical margin very oblique, nearly straight; dorsal margin rounded. The costal vein reaches the margin beyond the middle; subcostal nervures not equidistant. The discoidal cell is situated on the upper half of the wing, extends nearly two-thirds its length, and widest at its apex. Posterior wings elongate; apex obtuse, produced; apical margin very oblique and straight in the ♂, concave in the ♀; basal angle produced. Abdomen long and slender in the ♂, stouter and shorter in the ♀; a small tuft at the apex in both sexes.

This genus contains but one British species. In the acute, triangular shape of the anterior wings, it resembles *Mixodia*; but the singularly-shaped posterior wings in the ♂, and the differently-shaped ones in the ♀ (independent of the disparity in the colouring of these organs), not only remove it from that, but from any other British genus. The larva is unknown.

1. *reliquana*, Hüb. Alis anticis fulvis, maculis duabus ad marginem dorsalem nigris, medio brunneo-obscuris; costa punctis geminatis pallidis; posticis *maris* basi margaritaceis, apice fusco-fuliginosis; *fœm.* nigro-fuliginosis. ♂ Exp. al. 5 lin.

Head ochreous, paler in front. Face cream-colour. Eyes black. Palpi longer than the head; above cream-colour, at the sides and beneath at base white, the apex ochreous. Antennæ glossy, drab, or pale brown. Thorax dull ochreous, with dusky brown transverse bands; the crest ochreous. Patagia ochreous, towards the base dusky brown. Anterior wings glossy, cream-colour, with ochreous and golden-brown clouds and umber markings. On the dorsal margin are two somewhat triangular, streaky umber patches, narrowly edged with whitish, one situated before the middle, the other wider, within the anal angle; opposite and between these, upon the costa, is a larger undefined, golden-brown cloud, in which are two broadish umber streaks; the apex of the wing suffused with golden brown at the base, and between the dorsal patches with ochreous. At the base are also a few dusky freckles. The costa is maculated, there being before the middle two, and five whitish geminations beyond, all more or less produced, especially the apical one, which is continued across the angle to near the middle of the apical margin, the space between its origin and its termination dusky. Apical scales ochreous, sometimes speckled with brown, with paler bases. Cilia paler. Posterior wings and marginal scales pearly white, and diaphanous at the base, merging into pale smoky umber at the apex. Cilia pearly white at the anal angle, smoky grey at and towards the apex. Abdomen glossy, umber, the apex yellow. ♀ Exp. al. 5 lin. Anterior wings marked as in the ♂, but richer in colour; posterior wings golden brown, darkest at the apex.

Not a very common species; slightly variable in size, but tolerably constant in colour and markings.

The imago appears in May in woods and hedges, flying in the sunshine. It occurs at Darenth and Swanscombe Woods, at Dulwich, and other places round London; at Epping and the New Forests, Devonshire, &c.

Genus II. PHTHEOCHROA, STEPHENS.

Antennæ *very long*, slender, and slightly plumose beneath. Palpi much longer than the head, porrected horizontally, adpressed, compressed. Basal joint stout, truncate; apical slender, cylindrical, slightly thickened before the apex; middle regularly arcuated, slightly thickened before the middle, five times as long as the apical. Maxillæ slender, as long as the palpi. Thorax stout, ovate, slightly

tufted, and trigonate behind. Anterior wings elongate: length more than twice the width. Costa nearly straight, slightly arcuated at the base, and concave in the middle; apex arcuated, obtuse; apical margin oblique, rounded; dorsal margin rounded. The costal vein attains the margin at the middle; the discoidal cell lies in the upper half of the wing, extends scarcely two-thirds its length, spacious, and widest before its apex. The subcostal nervures not equidistant; the first inserted two-thirds from the base, preceded by an *internal spur on the subcostal vein*. The submedian nervure inserted towards the apex of the discoidal cell. Posterior wings ample; apex obtuse; apical margin very concave; dorsal margin entire; costal margin very concave. Abdomen slender in the ♂, stout in the ♀; apex tufted in both sexes.

A singular genus, and presenting remarkable peculiarities in structure, colours, and clothing. In the clothing of the anterior wings there is some resemblance to *Oxygrapha* and *Peronea*, but the long antennæ, the acutely-truncated apex, and the extreme length of the palpi, besides the abnormal shape of the middle joint, at once remove it from all proximity to those genera. The larva has not been sufficiently observed to offer characters for classification.

1. *rugosana*, Hüb. Alis anticis scabris lituris albis, ochraceis, fuscis, roseis, brunneis, strigis maculisque variis; posticis fuscis, subtus fusco-multistrigatis. ♂ Exp. al. 8-10 lin.

Head white, a few brown scales over the eyes. Face white. Eyes black. Palpi more than twice the length of the head; above, between, and at the sides white, with a few brown scales on the latter, beneath slightly drab. Antennæ pale brown; basal joint clothed with white scales. Thorax: on the vertex white, edged at the sides with black; the crest or tuft white, with rich orange scales at each side. Patagia rich drab, speckled with chestnut-brown at the base, pale at the apex. Anterior wings dull, white ground-colour, thickly marked with obovate or reniform patches of various colours, with numerous tufts of elevated scales, which are *white when viewed obliquely from the base, and black when viewed towards the apex*: vertically these tufts are scarcely perceptible, and are of different colours, according to the colour of the markings on which they are placed. At the base is a streaky patch, extending one-fifth along the costa, of dull drab or pale fuscous colour, streaked with umber, and paler on the dorsal margin. In the middle of the costa is a truncate triangular, fuscous patch, speckled and edged anteriorly with umber; at the truncation is a small roundish, fawn-coloured ocellus, with a minute dusky centre, and bordered with white: meeting this from each side of the triangular patch, are two broadish bands, the anterior of a rose pink colour (which soon fades after death), the posterior

white, each bearing a white tuft; below the former are two dusky crimson tufts, from which proceed two umber-coloured marks, divided by an ochreous line and reaching the aforesaid ocellus; these marks are succeeded below by two others, of dull crimson, edged with white, and then by two more, smoky black. Between these markings and the basal patch is, on the costa, a pale abbreviated space (with a white tuft upon it), afterwards continued to the dorsal margin by drab and umber markings. Beyond the posterior white band at the middle of the costa, in a wavy direction, are placed several whitish tufts on a pale fuscous or drab ground, speckled with umber. Towards the apex is an undulating fascia, which attains the anal angle, of fuscous colour, edged with umber, and dilating somewhat in the middle. In the apex is an oblique band, of a pinkish-brown colour, darkest on the apical margin. The dorsal margin is wholly suffused with fuscous, and streaked throughout with dark umber and drab. Apical scales dull, pale umber, with drab bases. Cilia slightly glossy, drab. Posterior wings fuscous grey, speckled, slightly darker at the margins, the speckled appearance resulting from the numerous iron-grey or smoky-black maculations of the under surface showing through. Marginal scales pale, fuscous, with lighter bases. Cilia greyish white. ♀ Exp. al. 8-10 lin.

This beautiful and conspicuous insect is far from uncommon, and *unlike any other known British species*.

The imago appears in June, amongst *Bryonia dioica* (Red Bryony), and occurs at Coombe and Darenth Woods, at Sanderstead Downs, near Beckenham, at Sydenham, Northfleet, and throughout the Metropolitan district. It is a very sluggish insect, flying only for a short time at dusk.

The larva of this species is supposed to feed on the above plant, but has not yet been bred. It is found full-grown in October, about which time it spins a tough cocoon, formed under the leaves which are spun down to the stem.

Genus III. ERIOPSELA, GUENÉE.

Palpi longer than the head, ascending, remote, diverging. Basal short; apical minute, obovate, not so long as the basal; middle four times as long as the apical, irregularly obovate, slightly curved, very stout, thickest beyond the middle. Maxillæ slender, as long as the palpi. Thorax stout, ovate. Anterior wings elongate; length more than twice the width. Costa straight or slightly arcuated; apex acute; apical margin obliquely truncate or slightly concave; dorsal

margin slightly rounded. The costal vein reaches the margin before the middle. The discoidal cell lies towards the middle of the wing, scarcely reaching two-thirds its length. The subcostal nervures equidistant. An internal nervure is inserted between the first and second subcostal nervures, crossing to the second apical nervure. Posterior wings elongate; apex obtuse; apical margin oblique, scarcely concave; anal angle somewhat produced. Abdomen moderately robust, slightly stouter in the ♀, tufted in both sexes.

Comprising insects of moderate size and of sombre colours; the ♀, at least of one of the species (*fractifasciana*), being much smaller than the opposite sex.

The British species in this genus are two, which are thus tabulated:—

- | | |
|---|-------------|
| A. Anterior wings with the fasciæ and markings scarcely so dark on the dorsal as upon the costal margin | Species . 1 |
| B. Anterior wings with the fasciæ and markings darker on the dorsal than upon the costal margin | Species . 2 |

1. *fractifasciana*, Haw. Alis anticis favillaceis, fasciis duabus interruptis, brunneo-fuscis: maculis costalibus geminatis obliquis; posticis griseis. ♂ Exp. al. 6–6½ lin.

Head dull brown. Face paler, inclining to ochreous. Eyes deep brown. Palpi longer than the head; fuscous above and at the sides; slightly paler beneath. Antennæ fuscous, beneath pubescent, the basal joint drab. Thorax and patagia fuscous, dull. Anterior wings slightly glossy, greyish fuscous, with slightly darker markings and fasciæ. At the base is a streaky patch, extending one-fourth along the costa and one-third along the dorsal margin, its posterior edge rounded. At the middle of the costa is an indistinct, pale fascia, which attains the anal angle, narrow and darkest at its origin, its anterior edge slightly undulate, its posterior dilated and angulated about the middle. The costa, beyond the middle, is distinctly geminated with white or pale drab, the interspaces umber, of which one, near the apex, is twice the width of any of the rest, and is sometimes produced into a pale brown streak in the direction of the anal angle. The pale portions of the wing are irrorated with grey. Apical scales fuscous, with the tips and bases pale grey. Cilia fuscous, the tips pale grey. Posterior wings with a subdued gloss, pale grey, palest at the base, and with a slight fuscous tinge towards the apex. Marginal scales glossy, fuscous, the bases drab. Cilia drab. Legs fuscous. Abdomen fuscous; the caudal tuft drab. ♀ Exp. al. 5–6 lin. Anterior wings paler in the ground-colour and darker in the markings, therefore altogether more conspicuous, than in the ♂; posterior wings wholly pale fuscous.

Far from uncommon, and variable in the intensity of its markings. It is very nearly allied to *E. quadrana*, but may be distinguished by its more pointed and less distinctly marked wings, especially on the dorsal margin, and by the *underside of the posterior wings not being speckled on the costal margin and the apex*.

The imago appears in May and August, flying among low herbage, especially in the chalky districts. Near Croydon, Sanderstead Downs, Box-hill, near Bristol, near Dover, &c. are given as its localities.

2. *quadrana*. Hüb. Alis anticis griseis vel cinereis, fasciis duabus ad marginem dorsalem saturatoribus brunneis; posticis griseis.
♂ Exp. al. 7-7½ lin.

Head and face tawny. Eyes black, with a velvety appearance. Palpi longer than the head, drab, at the sides marked with pale fuscous towards the apex and at the base, paler between. Antennæ grey. Thorax griseous. Patagia griseous, with the bases tawny. Anterior wings dull, pale grey, with drab and brown markings, and clouds. One-fourth from the base is a brown fascia, darkest towards the dorsal margin, sometimes obsolete on the costa, and angulated posteriorly in the middle. At the middle of the costa commences another similar-coloured fascia, also darkest towards the dorsal margin, where it sometimes dilates into a semilunate spot, with its centre palest. The costa is marked with two geminated streaks before the middle, and with four (sometimes five) beyond, the interspaces being fuscous; below these streaks, and towards the apex, is a pale, fuscous cloud, mixed slightly with ochreous. The pale portions of the wing streaked with transverse, abbreviated, wavy, dusky lines. Apical scales and cilia fuscous, with drab tips, both paler at the anal angle. Posterior wings dull, grey, with a fuscous tinge; on the under side the costal and apical margins are speckled with iron-grey. Marginal scales same colour as the posterior wings, with the bases paler. Cilia pale grey. Abdomen iron-grey, glossy; the caudal tuft drab. ♀ Exp. al. 6-6½ lin.

An uncommon species; like *E. fractifasciana*, but readily distinguished *by the fasciæ being strongly expressed (especially in the ♀) on the dorsal margin, and by the costal and apical margins of the under surface being speckled with iron-grey*.

The imago appears in May, and occurs at West Wickham, Stoat's-nest Downs; also in Sussex, at Windermere, &c.

The larva is supposed to feed on *Scabiosa arvensis* (the Field Scabious), as that plant is common where the insect occurs.

Genus IV. **CHROSIS**, GUENÉE.

Palpi longer than the head, ascending, remote. Basal joint pyriform, truncate; apical as long as the basal, slender, terminating in a point; middle stout, slightly curved, thickest near the apex, more than three times as long as the apical. Maxillæ slender, as long as the palpi. Thorax robust, ovate. Anterior wings: in length exceeding twice the width. Costa slightly arcuated; apex obtuse; apical margin *much*, and the dorsal margin *slightly, rounded*. The costal vein reaches to the middle of the margin; the discoidal cell capacious, lying towards the middle of the wing, extends two-thirds its length; the subcostal nervures equidistant. Posterior wings: apex obtuse; the apical margin concave. Abdomen longest in the ♂, stout; and with a small tuft at the apex in both sexes.

This genus is established by M. Guenée for the reception of the species herein assigned to it, and one or two others, which we have now dissociated, the structural details warranting the separation. As at present restricted, it is still an incongruous group, but is nevertheless adopted until the habits and economy of the larvæ not only justify, but indicate, a more natural position.

The British species are thus arranged:—

- | | |
|--|-----------|
| A. Anterior wings with dull, silvery streaks, and <i>alternated light and dark</i> markings between | Species 1 |
| B. Anterior wings <i>clouded with black</i> , the <i>tips ochreous</i> , and with lustrous blue streaks superposed | Species 2 |

1. *tesserana*, Schiff. Alis anticis albidis, flavis vel aurantiacis; maculis quinque tessulatim positis, cinereis, fuscis, ferrugineis aut castaneis; strigis argenteis flexuosis; posticis cinereis. ♂ Exp. al. 4–6 lin.

Head and face bright ochreous. Eyes black. Palpi longer than the head; ochreous above, between, and beneath; dusky at the sides and apex. Antennæ brown. Thorax and patagia dull ochreous, irrorated with iron-grey. Anterior wings glossy, with alternated ochreous and ferruginous patches, and transverse lustrous blue streaks between; these streaks are thus disposed: one situated one-fifth from the base, convex; about the middle of the costa originate two others, angulated; and a fourth, nearly straight, reaching the anal angle; along the apex are a few, more or less distinct, similar lustrous streaks. The spaces between the main streaks are alternated above and below with ochreous and ferruginous; the apical space, however, is usually more suffused, and is ferruginous *above and below*, and ochreous *between*. Apical scales ferruginous. Cilia buff-colour, becoming iron-grey at the anal angle. Posterior wings

and marginal scales dark fuscous, the latter with whitish bases. Cilia whitish. Abdomen fuscous grey. ♀ Exp. al. 4-6½ lin. Anterior wings marked as in the ♂, but usually more suffused, and not so bright in colour.

A very common insect on the Downs in the south of England, variable in colour, and also in size. The ground-colour ranges from pale drab to rich orange, and the markings from dusky drab to rich ferruginous and chestnut colour.

The imago appears in June, July, and August, among mixed herbage, at Deal, Brighton, Dover, Mickleham, Croydon, Sanderstead, Charlton, in Hants, and other places.

2. *Audouinana*, Dup. Alis anticis nigris; apice maculisque ochraceis, nebulis strigisque cæruleis impositis; posticis fusco-griseis. ♂ Exp. al. 6-6½ lin.

Head mouse-colour, palest on the vertex. Face mouse-colour. Eyes black. Palpi as long as the head, pale ochreous. Antennæ pale fuscous. Thorax and patagia smoky brown or umber, the latter greyish at the apex. Anterior wings with a rich satiny gloss; dark umber, inclining to smoky black, with the apex ochreous, and small ochreous patches on the costal and dorsal margins, and lustrous blue streaks upon the disk. The smoky-black colouring extends nearly to the apex, where it softens into dusky ochreous. In the middle of the costa is a geminated ochreous spot, and two smaller simple ones near the apex; near the base on the dorsal margin is a small ochreous cloud; at the base is an interrupted lustrous blue patch, followed by a curved streak going across the disk; another similar one proceeds from the middle of the costa to near the anal angle, and a third crosses the apical region; *all* lustrous blue. Between these streaks are several minute tufts of elevated scales, which assume a lustrous blue tinge when viewed *from* the base, jet-black from above, and greyish towards the base. Apical scales dull ochreous, mixed with dusky scales towards the anal angle. Cilia paler. Posterior wings glossy, fuscous grey. Marginal scales pale fuscous. Cilia grey. Abdomen ochreous at the base, becoming blackish towards the apex; the caudal tuft mixed with black and ochreous scales. ♀ Exp. al. 6-6½ lin.

A rare species; constant in size but variable in colour, the ochreous markings being more or less present.

The imago appears in June and July, frequenting Oaks; occurring at Tonbridge, Darent Wood, and Black Park.

Obs. This insect seems ill-located here: from its having tufts of elevated scales on the upper wings, it comes near *Peronea*, but the shape of the wings themselves does not warrant its position in that genus.

Genus V. ARGYROLEPIA, STEPH.

Palpi considerably longer than the head; basal joint stout, pyriform, truncate; apical minute, stout, somewhat egg-shaped, not so long as the basal; middle stout, curved, ascending, thickest beyond the centre, four times as long as the apical. Maxillæ not so long as the palpi. Thorax robust, ovate. Anterior wings: length exceeding twice the width, elongate, triangulate; costa slightly arcuated, or nearly straight; apex obtuse; apical and dorsal margins rounded; cilia produced at the anal angle. The costal vein reaches to the middle of the margin; subcostal nervures equidistant. The discoidal cell capacious, widest beyond the middle, extending scarcely two-thirds the length of the wing. Posterior wings: apex obtuse; apical margin concave; anal angle slightly produced.

A genus of considerable extent; some of the species rare, but none of common occurrence. They are mostly ornamented on the anterior wings with minute silvery spots and streaks. In repose these insects sit with their wings very deflected, and closely adpressed to their sides, after the manner of the *Eupæciliæ*, to which they bear several points of affinity. The larvæ are all (?) of them internal feeders, but their individual habits have not been sufficiently observed.

The British species are nine in number, and are arranged according to the table below:—

- A. Anterior wings bright yellow.
 - a. With two *distinct speckled* black fasciæ . . . Species . 1
 - b. With the *two black fasciæ suffusing on the dorsal margin* Species . 2
- B. Anterior wings ochreous, or primrose-colour.
 - a. With an angulated, *uninterrupted* fascia in the middle Species . 3
 - b. With an angulated, *interrupted* fascia in the middle Species 4-7
- C. Anterior wings *drab or very pale ochreous, much speckled* and streaked with fuscous.
 - a. With the *posterior wings white* in the ♂, and cinereous in the ♀ Species . 8
 - b. With the *posterior wings white at the base, and broadly bordered and speckled with fuscous* in both sexes Species . 9

1. *æneana*, Hüb. Alis anticis aurantiacis; fascia media apiceque atris, argenteo- vel cæruleo-punctatis; posticis brunneo-obscuris. ♂ Exp. al. 6-8 lin.
 Head and face rich orange. Eyes black. Palpi longer than the

head, bright orange. Antennæ brown. Thorax and patagia dull orange, banded with black. Anterior wings bright orange-colour, with two broad, irregular, interrupted black fasciæ, marked with bright lustrous blue spots; one of these fasciæ occupies the middle of the wing, the other the apical region. The base is marked with two suffusing black and lustrous blue spots. The costa is maculated throughout with black, as is also the dorsal margin beyond the middle. Apical scales rich orange, cilia paler, both becoming black at the anal angle. Posterior wings and marginal scales umber, the latter with yellow bases. Cilia yellow. Abdomen umber, the apex orange. ♀ Exp. al. 8 lin.

A local species; slightly variable in size, but constant in colour and markings.

The imago appears in June among Ragwort (*Senecio Jacobæa*). Till within the last few years, the only specimens known were captured in Epping Forest. It has occurred latterly (in 1847) in profusion at Willesden in Middlesex; also at Southend, but sparingly.

The larva is said to feed in the roots of the Ragwort, and to be found in the month of January.

2. *Schreibersiana*, Fröl. Alis anticis nitidis, basi ochraceis; pone medium nigris, atomis ochraceis; macula costali ochracea; posticis pallide brunneis, subtus punctatis. ♂ Exp. al. 5-6 lin.

Head primrose-colour, inclining to ochreous. Face paler. Eyes black. Palpi longer than the head; above cream-colour; darker at the sides. Antennæ fuscous, in some lights appearing shining grey. Thorax black, mixed with ochreous. Patagia at the base black, the apex ochreous. Anterior wings glossy, cream-colour; clouded at the base with rich ochreous, thickly and broadly marked towards the apex with blackish markings. On the costa *near* the base, and on the dorsal margin *at* the base, umbreous. From the middle of the costa, and one-third from the base on the dorsal margin the wing is black, mixed slightly with ochreous, except a small quadrate oblique, ochreous patch beyond the middle on the costa. Apical scales black, with slightly paler bases. Cilia black, with the bases narrowly subochreous. Posterior wings pale umbreous, with the speckled under-surface showing through. Marginal scales fuscous, with the bases cream-colour. Cilia dusky straw-colour. Legs straw-colour. Abdomen umbreous, the caudal tuft inclining to ferruginous. ♀ Exp. al. 6-7 lin. In markings like the ♂, but much brighter in the colours.

A very rare species, variable in size and in the extent of its markings, but tolerably constant in colour.

The imago appears in June, and occurs at Yaxley in Huntingdonshire, and in the fens of Cambridgshire.

3. *Mussehliana*, Treit. Alis anticis nitidis stramineis, nebulis ochraceis variis; medio fascia obliqua brunnea, quæ vix costam attingit; costa margineque dorsali punctis brunneis; posticis griseis, apice fulvescentibus. ♂ Exp. al. $4\frac{1}{2}$ –5 lin.

Head and face straw-colour, inclining to ochreous. Eyes intense brown. Palpi short, pale ochreous. Antennæ fuscous. Thorax and patagia pale fuscous, with an ochreous tinge. Anterior wings glossy, straw-colour, with ochreous-brown markings. The costa is clouded from the base to the middle with fuscous ochreous; beyond the middle it is maculated with pale umbreous, as is also the dorsal margin; the latter more distinctly. Before the middle of the dorsal margin arises a broad, oblique, dull ochreous fascia, which attains the costa, where it is somewhat indistinct; on its posterior margin, in the middle, it is marked with a fuscous patch, which is more or less defined in different specimens. The apical region is clouded with ochreous, and there is also a pale ochreous triangular patch on the dorsal margin within the anal angle. Apical scales and cilia straw-colour, with the apex slightly fuscous. Posterior wings glossy, grey, with a fuscous tinge towards the margins. Legs straw-colour. Abdomen pale fuscous; the apex dull ochreous. ♀ Exp. al. 6– $6\frac{1}{2}$ lin. In this sex the posterior wings are darker.

Exceedingly rare; one or two specimens were captured many years ago in Devonshire by the late Richard Weaver, and are in the cabinet of Mr. Henry Doubleday. In appearance allied to *Eupæcilia rupicola*, but distinguished by *its general paler colouring, and grey underwings*.

4. *Baumanniana*, Schiff. Alis anticis albidis aut subcinereis; nebula basi, medio fascia obliqua angulata, pone altera interrupta, apiceque ferrugineis obscuris, strigis punctisque subargenteis; posticis cinereis, subtus punctatis. ♂ Exp. al. 11– $11\frac{1}{2}$ lin.

Head rich ferruginous. Face darker. Eyes black. Palpi longer than the head, rich brown, grey between. Antennæ brown; basal joint clothed beneath with ferruginous scales. Thorax deep ferruginous in front, iron-grey on the vertex; the bifid crest is deep ferruginous at the sides, and ochreous between. Patagia chocolate-brown, the tips ochreous. Anterior wings pale ochreous, broadly marked with deep ferruginous, and lustrous silvery spots and streaks. At the base is a cloud sharply defined on the costa, which it occupies one-fifth of its length. Before the middle is a broad, sharply defined, angulated fascia, interrupted posteriorly by a longitudinal pale ochreous line going through it; previous to the interruption, this fascia is directed towards the anal angle, but afterwards it alters its

course, diminishing in width, and attains the dorsal margin *before the middle*. At the subapical portion of the costa is a large, somewhat trigonate patch, and a smaller one at the apex; and opposite the former, within the anal angle, is another patch, sharply defined, but of irregular shape; the apical region more or less suffused with chocolate-colour, particularly on the venation, mixed with silvery freckles. On the costa are four rather indistinct geminations, two before and two beyond the central fascia, all more or less produced into silvery streaks, which run along the borders of the principal markings. The dorsal margin is finely maculated throughout, and the pale portions of the wings slightly suffused with chocolate-colour. Apical scales ferruginous, with pinkish-drab bases. Cilia pale ferruginous, with a rosy hue. Posterior wings grey, with a violet tinge; slightly darker towards the margins, where they are edged with a dark line, the speckling of the under-surface showing through, imparting a mottled appearance above. Marginal scales dark violet-grey, with the bases pale drab. Cilia drab. Abdomen iron-grey, with pale shining scales at the edges of the segments; the apex grey. ♀ Exp. al. 11–11½ lin.

A rather uncommon species; closely allied to the succeeding, *A. sub-Baumanniana*, and until now confounded with it. It is distinguished by its *much greater size, the deeper colours of the anterior wings, the central fascia is more oblique, and reaches the dorsal margin nearer the base* than in the latter species.

The imago appears in May and June among Rushes in damp places. It occurs at Darenth Wood, in the New Forest, in Suffolk, at various places round London, in Cheshire and the north of England; also in Scotland, and at Belfast in Ireland.

5. *sub-Baumanniana*, Wilkinson, MSS. Alis anticis olivaceo-stramineis, nebula basi, medio fascia angulata, altera ante apicem interrupta ferrugineis, strigis punctisque subargenteis; posticis subtus punctatis. ♂ Exp. al. 7–7½ lin.

Head ochreous. Face slightly darker. Eyes black. Palpi longer than the head. Antennæ shining, ochreous at the base above, the remainder brown. Thorax and crest ochreous, sometimes irrorated with grey. Patagia of same colour as the thorax. Anterior wings pale ochreous, with pale-ferruginous markings with lustrous silvery borders. At the base is a patch, sharply defined on the costa, and softening into the ground-colour of the wing; sometimes it is suffused to the dorsal margin. A broad distinct fascia commences at the middle of the costa, widely interrupted before the centre, from whence it diminishes, and attains the dorsal margin. In the subapical portion of the costa is a large quadrate patch, succeeded by a smaller mark at the apex, and in the anal angle is a third one. On the costa are four indistinct geminations, two before and two beyond

the central fascia, which are produced into silvery streaks running along the borders of the markings. Near the apex is a streak, which is followed by a series of silvery dots along the apical region. The pale portions of the wing are suffused with ochreous, and the dorsal margin is maculated throughout with the same colour. Apical scales ferruginous, with pale bases. Cilia pale ferruginous, with a rosy tint; sometimes both are alternated with ochreous. Posterior wings grey, with a violet tint; darkest on the margin, of mottled appearance, in consequence of the speckling of the under-surface showing through. Marginal scales dark violet-grey, the bases with a pearly lustre. Cilia of pearly lustre, with a slight violet tinge. Abdomen iron-grey; the apex drab. ♀ Exp. al. 7-7½ lin. Anterior wings marked as in the ♂.

More common than the *A. Baumanniana*; smaller in size, and paler in colour: the central fascia not attaining the dorsal margin so near the base.

The imago appears in June and July, in dry chalky situations, among mixed growth. It occurs at Darenth Wood, at Mickleham, on the Downs beyond Croydon, near Brighton, and other places in the south.

6. *badiana*, Schiff. Alis anticis nitidis stramineis, nebulis fusco-ochraceis; medio fascia obliqua interrupta brunnea; ante apicem altera pallidiori; posticis fusco-cinereis. ♂ Exp. al. 8-8½ lin.

Head pale primrose-colour behind, paler in front. Face whitish. Eyes dark brown. Palpi longer than the head, very pale yellow above, between, and beneath, fuscous at the sides. Antennæ brown. Thorax primrose-colour. Patagia pale brown; the apex primrose-colour. Anterior wings glossy, pale primrose-colour, with ochreous clouds, and chocolate-coloured markings. On the costa at the base, at the middle, and towards the apex, are ochreous-brown markings, of more or less intensity in different specimens; the middle one is produced into a quadrate patch directed towards the anal angle, and softening into the ground-colour of the wing. At the base is an ochreous cloud, and before the middle of the dorsal margin is an oblique, produced, chocolate-coloured mark, extending beyond the centre of the disk towards the central costal patch, its apex rounded, and its posterior and anterior edges slightly constricted in the middle. Within the anal angle is a small, similar-coloured, sharply-defined triangular patch; the pale portions of the wing broadly clouded with ochreous; a slight silvery lustre borders the principal markings, and there is also a curved lustrous streak proceeding from the anterior margin of the apical costal mark to the anal angle. Apical scales and cilia pale primrose-colour. Posterior wings and marginal scales dull, of violet-brown colour; the latter with drab bases. Cilia glossy,

drab. Abdomen grey; the apex primrose-colour. ♀ Exp. al. 9–10½ lin. Anterior wings marked as in the ♂, but richer in colour.

A rather common insect; slightly variable in size, but constant in colour.

The imago appears in July, frequenting *Arctium Lappa* (the Burdock), and occurs wherever that plant grows. Whittlesea Mere and Battersea Fields are old localities for the insect. It is taken in the Hackney Marshes, West Wickham Wood; at Hertford; in the Isle of Wight, Cornwall, and other places; also near Dublin.

The larva feeds in the stems and roots of *Arctium Lappa*.

7. *Cnicana*, Doub. Alis anticis pallide stramineis; costa basi, fascia medio interrupta, maculaque costali brunneis; posticis fusco-griseis. ♂ Exp. al. 6½–7 lin.

Head whitish on the vertex, inclining to ochreous round the eyes and behind. Face whitish. Eyes black. Palpi longer than the head, pale primrose above and between, dusky ochreous at the sides, drab beneath. Antennæ fuscous. Thorax pale ferruginous at the sides and in front; the vertex pale primrose. Patagia: at the base ferruginous, pale primrose at the apex. Anterior wings glossy, whitish, with pale ochreous clouds, and clear ferruginous markings. On the costa, at the base, is a patch extending one-fifth its length. Before the middle is an oblique interrupted fascia, the interruption being about one-third from its origin. Midway between the central fascia and the apex, on the costa, is a somewhat rounded patch; and within the anal angle, on the dorsal margin, is a small, sharply-defined triangular mark. The apical portion of the wing is clouded with pale ochreous, and a few dusky atoms. At the base, towards the dorsal margin, is a dusky cloud. Apical scales and cilia pale primrose. Posterior wings pale fuscous, clothed with coarse scales. Marginal scales fuscous, with straw-coloured bases. Cilia straw-colour. Abdomen fuscous; the caudal tuft dull ochreous. ♀ Exp. al. 6½–7 lin. Anterior wings marked as in the ♂, but richer in colour.

A rare species in cabinets; much smaller and paler than *A. badiana*, which it resembles; its chief distinguishing character is that the *central fascia is much more slender, and does not dilate upon the dorsal margin*. First introduced into the British lists by Mr. Henry Doubleday.

The imago frequents Thistles, and appears in July and August at Epping, &c.

8. **Dubrisana**, Curtis. Alis anticis olivaceo-stramineis, atomis fascisque duabus indistinctis cinereis; puncto nigro ante angulum analem, altero costali nigris, punctulis subargenteis; posticis *maris* niveis marginibus fuscis; *femine* cinereis apice saturatoribus. ♂ Exp. al. 4–8 lin.

Head pale olivaceous green. Face dark fuscous. Eyes black. Palpi longer than the head, fuscous above and at the sides, whitish beneath. Antennæ blackish. Thorax umber, mixed with pale greenish scales. Patagia: at the base same colour as the thorax; the tips whitish. Anterior wings dull, very pale primrose, mixed with dusky or umber freckles, with an irregular silvery-lustred streak before the middle, another beyond, and two others straighter and more defined towards the apex, besides numerous similar spots disposed over the disk. The costa is maculated throughout, and towards the apex are two (the innermost largest and darkest) patches of umber scales, and a still larger, but more suffused one, on the dorsal margin, near the anal angle. Apical scales and cilia yellowish white. Posterior wings pearly white, with the upper edge speckled, and the apical portion narrowly bordered with fuscous. Marginal scales and cilia white. Abdomen: at the base dull umber, whitish towards the apex; the apex very pale drab, or dirty white. ♀ Exp. al. 5–8 lin. Anterior wings deeper coloured, and the freckling more distinct than in the ♂. Posterior wings pale fuscous. Marginal scales fuscous, with whitish bases. Cilia greyish at the base, the tips whitish.

Mostly a coast species, and there somewhat common; very variable, both in size and colour. The ground-colour ranges from white to pale ochreous, and the freckling from grey to nearly black. It is very closely allied to *A. maritimana*; but the latter insect is not so variable in size, is larger, more coarsely and thickly freckled, and the posterior wings in both sexes broadly mottled round the margins.

The imago appears in July and August, and occurs at Dover, Deal, Margate, and other places on the coast. It has also been captured on the Old Tram Road near Croydon, and in Worcestershire.

9. **maritimana**, Guen. Alis anticis albidis aut ochraceo-stramineis, punctisque strigis numerosis nigro-fuscis; posticis *maris et femine*, basi albis, marginibus interne punctis, nigro-fuscis. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head and face dusky, mixed with tawny or drab scales. Eyes grey. Palpi longer than the head, above tawny, speckled with dusky scales, slightly paler at the sides and beneath, but without the dusky scales. Antennæ fuscous, alternated with grey. Thorax and patagia dusky, mixed with tawny or drab scales; the crest of the former

tawny. Anterior wings: the ground-colour pale drab or tawny, inclining to ochreous, much streaked and speckled with dusky or fuscous, not arranged in defined markings; the ground-colour has a slight lustrous appearance, and the costa is maculated throughout; the spots smallest and darkest towards the base. Apical scales drab, or tawny, alternated with dusky patches. Cilia drab, with greyish bases. Posterior wings whitish at the base, much speckled with dull fuscous at and towards the margins, where they are darkest. Marginal scales fuscous, with pale drab bases. Cilia grey at the apex, whitish towards the anal angle. Abdomen tawny. ♀ Exp. al. 7-7½ lin. Anterior wings marked as in the ♂, but mostly with a yellower tinge.

Also a coast species; variable in the intensity of its colours, and somewhat in size. The ♂ appears to be the rarer sex. Allied to *A. Dubrisana*, but is larger, *more coarsely freckled, and the posterior wings in BOTH sexes broadly mottled round the margins*. In the latter species the posterior wings of the ♂ are only slightly maculated towards the apex; those of the ♀ plain pale fuscous.

The imago appears from May to August, and occurs near Deal. This species was first discovered in England by Mr. H. J. Harding, who detected the larva feeding in the roots and stems of the Sea Holly (*Eryngium maritimum*) in 1854, from which he bred the perfect insect the following year.

The pupa is reddish brown.

The larva is yellowish white, with black spots; and an interesting account of its habits is to be found in the 'Entomologist's Annual' for 1856, p. 35.

Genus VI. CALOSETIA, WILKINSON, MSS.

Palpi longer than the head, ascending, remote, diverging; basal joint moderately stout, drooping, pyriform, truncate; apical straight, slender, ending in a point, as long as the basal; middle ascending, thickening from the base, stoutest near the apex, four times as long as the apical. Maxillæ stout, shorter than the palpi. Thorax subglobose, robust. Anterior wings: length equals twice the width; costa regularly arcuated; apex acute; apical margin concave; dorsal margin rounded. The costal vein attains the margin one-third from the base. The discoidal cell lies in the upper half of the wing, extends to half its length, and receives an internal nervure which is inserted between the first and second subcostal nervures, and passing to the second apical nervure; the subcostal nervures equi-

distant. Posterior wings: apex acute; apical margin concave. Abdomen slender, and tufted in the ♂, rather stouter in the ♀.

The only species in this genus is of doubtful location. By the late J. F. Stephens, in his Museum Catalogue, it is included among the *Lithographiæ* (doubtless from its superficial resemblance to *Lithographia campoliliana*); but not possessing the folded costa, it can no longer remain there. It certainly comes nearer to *Eupæcilia* as to appearance, especially to the Section B. of that group (*vide infra*); but its admission into that genus can scarcely be warranted. In structural details there appears sufficient to justify its figuring as a distinct genus, and consequently the name *Calosetia* is proposed for it.

1. **nigromaculana**, Haw. Alis anticis niveis; costa nigro ferrugineoque punctata, apice puncto ferrugineo; margine dorsali maculis nigris; ad angulum analem macula ocellari plumbea atomisque lineolis longitudinalibus atris; posticis basi griseis, apice fuscis.
♂ Exp. al. $6\frac{1}{2}$ –8 lin.

Head snow-white, with a few dusky scales close over the eyes. Face snow-white. Eyes black. Palpi snow-white. Antennæ fuscous, alternated with drab. Thorax black in front, snow-white behind, sometimes with a spot on the vertex white. Patagia black at the base, the remainder white. Anterior wings white, with black fuscous and ferruginous markings. At the base are a number of black spots, with a patch of confluent streaks (also black) situated before the middle of the dorsal margin; these spots and patch, taken together, form the rhomboid basal mark. Within the anal angle is an elongated, acute, triangular mark, black and speckled at the base, ferruginous at the apex. The costa is maculated with black to the middle, where is an oblique quadrate mark, usually fuscous, followed by smaller markings, more or less distinct, and becoming ferruginous as they approach the apex, where is an eye-like spot of the latter colour; the subapical marks produced and confluent; the middle of the dorsal margin with black spots, or streaks of black, varying in intensity and in number from two to five; the central part of the wing more or less marked or spotted with fuscous. Near the apex is a broad black, longitudinal, and somewhat curved streak, and below it is the ocelloid patch, consisting of two enclosed lustrous leaden clouds, sometimes freckled with black, with a dusky mark between, bearing the longitudinal black streaks; the apical margin of the wing marked with ferruginous or fuscous. Apical scales black, with white bases and tips. Cilia: at the apex deep ferruginous, then becoming paler, with white bases, midway *before* the anal angle, then mottled grey, with white tips, becoming *white* at the anal angle, and iron-grey *beyond* it. Posterior wings shining, clothed with coarse fuscous scales, especially towards the apex, on a

pearly-lustred ground. Marginal scales fuscous, with straw-coloured bases. Cilia shining, pale grey. Abdomen pale fuscous, the caudal tuft straw-colour. ♀ Exp. al. 8–8½ lin.

This lovely insect varies considerably in size, as well as in the intensity of its markings, which become paler after death, especially in old specimens. The *Tortrix albana* of Haworth is but a pale variety of this insect.

The imago appears rather plentifully, in some places, among Ragwort, flying at dusk. We once took it in considerable numbers among *Inula dysenterica*. It occurs throughout the Metropolitan district in July; at Tunbridge Wells; in Worcestershire, Cheshire, &c.; also in Scotland; and at Carlow in Ireland.

The larva is said to feed on the Common Ragwort (*Senecio Jacobæa*); most probably it lives in the root.

Genus VII. EUPECILIA, STEPHENS.

Palpi slightly longer than the head; basal joint stout, short, truncate; apical obovate, slender, as long as the basal; middle stout, thickened beyond the centre, ascending, three times as long as the apical. Maxillæ as long as the palpi. Thorax stout, ovate. Anterior wings elongate, triangular; length equal to twice the width; costa nearly straight, or very slightly arcuated; apex obtuse; apical margin more or less rounded; dorsal margin straight; cilia produced at the anal angle. The costal vein reaches to the middle of the margin. The subcostal nervures equidistant. The discoidal cell capacious, much widest towards the apex, not reaching two-thirds along the wing. The apical nervures extended. Posterior wings elongate; apex obtuse; apical margin very concave; basal angle diminished. Abdomen moderate, stoutest in the ♀, a small tuft at the apex in the ♂.

A very numerous genus, and the species contained in it are of small and moderate size; none attaining large dimensions, and are, as a body, liable to a considerable range in colour. But few of the larvæ are known; probably they feed chiefly on the seeds of herbaceous plants.

There are nineteen British species, which are arranged as in the following table:—

A. Anterior wings with the *central fascia interrupted*, and not defined in shape.

- | | | |
|---|-------------------|-----|
| a. Posterior wings in the ♂ nearly wholly white,
fuscous grey in the ♀ | Species | 1 |
| b. Posterior wings fuscous in both sexes | Species | 2-3 |

- B. Anterior wings with the *central fascia abbreviated and undefined* Species . 4-5
- C. Anterior wings with the *central fascia entire and clearly defined*.
 - a. The *fascia widest on the dorsal margin* Species . . 6
 - b. The *fascia widest on the costa* Species . 7-8
 - c. The *fascia slightly swelling towards the middle* Species . 9-14
- D. Anterior wings with the *central fascia abbreviated, and clearly defined* Species 15-19

1. *maculosana*, Haw. Alis anticis albis, nebulis strigisque irregularibus nigris; medio punctis atris; posticis *maris* nitidis niveis, basi apiceque nigro punctatis; *foeminae* nigro-fuliginosis. ♂ Exp. al. 6 lin.

Head and face black, with a few white scales. Eyes black. Palpi as long as the head, black; white at the base beneath. Antennæ black. Thorax black, streaked transversely with pale grey. Patagia black, with the apex shining grey. Anterior wings dull white, spotted with iron-grey and black; the apical margin ferruginous. The base broadly maculated and streaked with iron-grey, with a few black spots in the middle, longitudinally disposed. At the centre of the costa originates a broad, undefined, iron-grey fascia (or rather cloud), with two or three irregular, conspicuous black spots, with tawny streaks between; black spots are also disposed along the middle of the dorsal margin. A broad iron-grey fascia crosses the apical angle; a small similar-coloured patch lies towards the anal angle, preceded by black spots. The apical margin streaked with iron-grey and ferruginous. Apical scales dull iron-grey, mixed with ferruginous. Cilia drab and iron-grey, with white bases, becoming white at the anal angle. Posterior wings dull, pearly white, with a fuscous patch at the anal angle; the superior or costal margin broadly fuscous, maculated with white, followed below by a fuscous streak, a few fuscous atoms also round the margin. Marginal scales and cilia dead white. Abdomen black; the apex dull brown. ♀ Exp. al. 6 lin. Anterior wings marked as in the ♂. Posterior wings and marginal scales fuscous grey, the latter with pale bases. Cilia white, with the tips grey.

A common species; tolerably constant in size, but slightly variable in the intensity of its markings. Distinguished from its congeners by the *very spotted appearance of the anterior wings, particularly in the ♀, and in the ♂ by the white posterior wings*.

The imago appears in May and June, and occurs throughout the Metropolitan district, in Devonshire, near Dover, in the New Forest, near Bristol, in Cheshire, and other places. It occurs also in Scotland.

2. **atricapitana**, Steph. Alis anticis albis, fascia obscura medio apiceque brunneis nigro punctatis; costa punctis atris; capite palpisque nigris; posticis griseis. ♂ Exp. al. 7-7½ lin.

Head dull, dusky umber. Face darker, but glossy. Eyes black. Palpi longer than the head, dusky umber. Antennæ black. Thorax and patagia dull, dusky umber. Anterior wings dull, of a flesh or rosy pink colour, especially beyond the middle, with dusky clouds and ferruginous and black markings. At the base is a speckled black patch, extending one-fifth along the costa, its posterior edge attaining the dorsal margin by a fine dusky line, the space enclosed only being half filled up by the black colour. At the centre of the costa is a sharply-defined, dusky, ferruginous, triangular mark, edged with black, with a greyish streak running from its apex to the opposite margin; on the anterior side of this streak is a broadish, dusky, ferruginous, abbreviated fascia, edged and spotted with black, originating on the dorsal margin, and preceded by a shorter streak. Posterior to the middle of the central streak are a few small dark spots, followed by a dull olivaceous patch towards the anal angle. The apical region is occupied by an irregular, dusky, ferruginous streak, succeeded by a blackish cloud with darker spots, bearing a few lustrous blue or leaden-coloured scales. The costa between the markings is finely spotted, the dorsal margin with coarser spots. Within the anal angle is a small black triangular mark. Apical scales mottled with ochreous and black. Cilia glossy, dull ochreous, broadly alternated with black; the bases ochreous; whitish at the anal angle. Posterior wings dull, clothed with coarse, pale, fuscous scales, with a mottled appearance, caused by the speckling of the under-surface showing through. Marginal scales fuscous, with drab bases. Cilia glossy, paler fuscous. Abdomen glossy, black; the apex slightly ochreous. ♀ Exp. al. 7-7½ lin. Anterior wings marked as in the ♂, but the colour richer.

Not a common species; constant in size and colour; allied to *Eup. dubitana*, but larger; the ground-colour of the anterior wings is pinkish, and the head black, whilst in the latter species the ground-colour and head are pale drab; the former, however, are sometimes pinkish.

The imago appears in July and August, but always sparingly. It occurs at Charlton Sand-pit; it has also been captured in North Wales, and at Clontarf and Dublin in Ireland.

3. **dubitana**, Hüb. Alis anticis albis vel pallide roseis, macula basi, medio costæ, altera quadrata margine dorsali, apiceque nigris; posticis fusco-griseis. ♂ Exp. al. 6½-7 lin.

Head straw-colour on the vertex, slightly dusky behind and over the eyes. Face ochreous above, dull drab below. Eyes black. Palpi

longer than the head, above and between pale straw-colour; at the sides and beneath fuscous. Antennæ umber-coloured. Thorax dark umber, mixed with grey scales. Patagia same colour as the thorax, the tips whitish. Anterior wings glossy, pale drab (sometimes flesh-coloured), clouded with pale ochre and with umber-coloured markings. At the base is an umber-coloured patch, extending one-fourth along the costa, but only half so far upon the dorsal margin. At the centre of the costa is an oblique quadrate patch of umber-colour, sharply defined, except at its apex, where it softens, and suffuses into the ground-colour. Opposite to this, but nearer the base, on the dorsal margin, is a large, somewhat triangular, mottled cloud. A curved umber streak originates on the costa at the apical region, and attains the anal angle; this is succeeded by a dusky cloud at the apex, marked with lustrous blue streaks. The costa and dorsal margins maculated, and towards the anal angle, between the apical and central markings, is a pale ochreous cloud. Posterior wings and marginal scales dull fuscous, the latter with drab bases, and glossy. Cilia glossy, pale fuscous. Abdomen fuscous. ♀ Exp. al. $6\frac{1}{2}$ –7 lin.

An uncommon species; discovered near Bristol by Mr. Sircom, about ten years ago. Like its congeners, constant in size and colour; allied to *Eup. atricapitana*, but distinguished by its *white or pale drab head, smaller size, and paler drab anterior wings*.

The imago appears in July and August; it occurs locally near Bristol; it has also been taken at Farnham, frequenting the Sallow, and at Probus in Cornwall. Stephens, in his 'Illustrations,' vol. iv. Haust. p. 183, says, it has occurred in the north of England and in Scotland.

4. *Sodaliana*, Haw. Alis anticis niveis; costa maculis duabus atomisque atris; medio marginis dorsalis fascia abbreviata alteraque ad apicem nigro-fuscis, punctis strigisque atris; apice puncto ferrugineo; posticis griseis, apice saturatoribus, subtus nigro punctatis. ♂ Exp. al. 6–7 lin.

Head and face white. Eyes black. Palpi longer than the head; above white; at the sides white, with an irroration of dusky scales; beneath, slightly ochreous at the base, grey in the middle, and whitish at the apex. Antennæ pale fuscous. Thorax white, sometimes with a longitudinal black line on the vertex. Patagia white, with one or two black spots on the shoulder. Anterior wings glossy, white, with ferruginous, fuscous and umber marks and specklings; the base streaked narrowly and sharply with umber. On the costa, near the base, is a deep umber quadrate patch, with another at the middle, triangular in shape and paler in colour; beneath this is a black crescent, followed by a somewhat conical, fuscous patch, streaked with umber, darkest anteriorly, and originating on the dorsal margin. At the anal angle, on the dorsal margin, is another paler

conical mark, with two black spots at its apex; beyond this, and originating at the anal angle, on the apical margin, is an oblique, somewhat dilating, dark umber mark; at the apex, on the costa, are three oblique spots: the anterior one fuscous, the remaining two bright ferruginous; these last are followed by three deep umber spots along the apical margin. The pale spaces between the markings at the apex streaked with bright lustrous blue scales, and the interval between the central and apical marks clouded with grey. The costa, towards the base, streaked sharply with black or umber between the markings. Apical scales glossy, dark iron-grey. Cilia smoky iron-grey, mixed with a few ferruginous scales. Posterior wings pale grey at the base, fuscous towards the margin, clothed with coarse scales, and having a mottled appearance, arising from the speckling of the under-surface showing through. ♀ Exp. al. $6\frac{1}{2}$ –7 lin.

A rare species; variable in size and colour; closely allied to *Eup. Carduana*, but distinguished from it by its more distinctly-maculated costa, and by the blotch in the middle of the dorsal margin being less defined, and destitute of ferruginous or pale chocolate, or rosy colouring.

The imago appears in May, June, and July, frequenting hedges and woods. It occurs near Ripley, in West Wickham Wood, Sanderstead Downs, near Bristol, in Worcestershire, &c.

5. *Carduana*, Zell. Alis anticis niveis; costa maculis duabus fuscis vel cinereis, medio marginis dorsalis fascia abbreviata, altera ad apicem ferrugineo, aut rubro, cinereo atroque variis; posticis fusco-cinereis. ♂ Exp. al. 6–7 lin.

Head and face dirty white. Eyes black. Palpi longer than the head; above, beneath, and between dirty white; at the sides dusky ochreous. Antennæ fuscous. Thorax dirty white. Patagia at the base dusky, whitish at the apex. Anterior wings dull, white, with fuscous umber, ferruginous, and sometimes dull crimson markings. On the costa are three somewhat quadrate, fuscous patches, two near the base, the third just beyond the middle. In the centre of the dorsal margin is an irregular bright ferruginous or crimson patch, speckled with black and edged broadly anteriorly with fuscous. Across the apical angle, preceded by a dark grey cloud, is an umber mark, speckled with black, followed by a crimson streak, which runs along the apical margin. The markings at the apex, with lustrous blue streaks between. At the anal angle is a ferruginous or olive-ochreous patch. The costa is spotted, with fuscous between the markings, and the dorsal margin with umber. Apical scales dark iron-grey. Cilia iron-grey, mottled with dull ferruginous. Posterior wings with a subdued gloss, fuscous. Marginal scales glossy, fuscous, with pale ochreous bases. Cilia paler. Abdomen fuscous

at the base, merging into umber towards the apex, which is ochreous. ♀ Exp. al. 6–6½ lin. Anterior wings marked as in the ♂, but more suffused, particularly at the apex.

An uncommon species; variable in size and colour, especially in the greater or less presence of ferruginous, chocolate, or rosy colour. Allied to *Eup. Sodaliana*, but may be distinguished from it by the *large maculations on the costa being paler and less defined, and by the blotch in the middle of the dorsal margin being mixed with ferruginous brown or rosy colour.*

The imago appears in July, and occurs near Guildford, Bristol, and not unfrequently near Mickleham.

6. **nana**, Haw. Alis anticis basi ochraceo-albis, fascia media, alteraque abbreviata ante apicem fuscis; posticis griseis. ♂ Exp. al. 4½–6 lin.

Head and face cream-colour. Eyes black. Palpi as long as the head; above cream-colour; at the sides inclining to ochreous at the base, and beneath. Antennæ drab. Thorax and patagia blackish, mixed with grey scales, the latter with their apices drab. Anterior wings dull, pale drab, inclining to cream-colour; a pale, ochreous or tawny cloud near the base and apex, with umber speckles and markings. At the base is an irrorated umber patch, extending broadly one-fifth along the costa. In the middle is a broad undefined and irregular fascia, fuscous and speckled with umber, enclosing a shining, streaky space on the dorsal margin, where it is dilated to twice its costal width; beyond this fascia is a slightly irrorated tawny cloud, succeeded by a patch near the apex, on the costa, of the same colour as the central fascia: this patch is sometimes produced to the anal angle. Apical scales and cilia sometimes wholly cream-colour, at others alternated with iron-grey patches, particularly towards the anal angle. Posterior wings with a subdued gloss, very pale grey. Marginal scales and cilia glossy, pale cream-colour or dirty-white. Abdomen iron-grey, darkest towards the apex; the caudal tuft cream-colour. ♀ Exp. al. 4½–6 lin.

An abundant species; very variable in size, and slightly so in the intensity of its markings.

The imago appears in June, July, and August, and occurs at Birch, Darenth and West Wickham Woods; various places round London, and in other parts of England; it occurs also in Scotland.

7. **ambiguella**, Hüb. Alis anticis ochraceis; medio fascia lata nigro-fuliginosa, atro strigata; posticis fuscis. ♂ Exp. al. 7 lin.

Head in front pale straw-colour, behind fuscous. Face pale straw-colour. Eyes black. Palpi longer than the head, straw-colour,

inclining to ochreous, palest at the tips and between. Antennæ fuscous. Thorax and patagia pale ochreous. Anterior wings glossy, ochreous, with a broad, deep, fuscous or umbreous fascia in the middle. The costa at the base is brown. The fascia is oblique and streaky; on the costa it occupies one-third the whole length, and covers one-fourth of the dorsal margin; its anterior and posterior edges somewhat wavy. The dorsal margin is speckled with umber: within the anal angle is a small, sharply-defined, trigonate, umber spot, and near the apical margin are one or two other minute spots of similar colour. Apical scales and cilia ochreous. Posterior wings pale, fuscous, slightly darker at the apex, with a grey tinge at the base. Marginal scales pale, fuscous. Cilia very pale, fuscous; sometimes white. Legs dull straw-colour. Abdomen glossy, dull ochreous.

Exceedingly rare; distinguished from its congeners by the shape of the central fascia. It is the *Tortrix roserana* of Frölich; and on the Continent does much injury in vineyards, the larva feeding on the flower buds of the Vine.

The imago has been captured flying among Birch trees, by Mr. J. J. Wier; it has also occurred near Edinburgh.

8. *curvistrigana*, Wilkinson, MSS. Alis anticis albidis, nitidis, nebulis ochraceis; medio fascia distincta, altera obliquaque curva ad angulum apicalem, ciliisque nigris; posticis cinereis, apice fuliginosis. ♂ Exp. al. 6-6½ lin.

Head dusky, smoky brown. Face grey, varying to pale ochreous. Eyes black. Palpi as long as the head; above pale primrose; at the sides, between, and beneath inclining to ochreous. Antennæ with the basal and few succeeding joints blackish; dark grey beyond. Thorax and patagia dusky, ochreous, paler behind. Anterior wings glossy, pale straw- or primrose-colour, clouded at the base and towards the apex with ochreous; the central fascia and apical marks fuscous, rich brown, and umber; the base broadly clouded with umber; the central fascia speckled with the same colour, broadest at its origin; its anterior edge defined, concave, and bounded by a narrow streak of the ground-colour; its posterior edge undefined, suddenly contracting, and forming an indentation one-third from its commencement. On the dorsal margin, close to the fascia, is an ochreous patch, and another above the anal angle. The apical angle is occupied by an oblique, sharply-defined, dull, ochreous, and umber patch, with one or two paler spots on the costa. The costa umber at the base, and spotted with the same colour at, and beyond, the middle. Apical scales umber, with paler bases. Cilia dark, iron-grey, mixed with dusky, ochreous scales. Posterior wings with a subdued gloss, rich fuscous. Marginal scales glossy, fuscous, with the bases narrowly dusky, ochreous. Cilia dusky, grey. Abdomen at

the base fuscous, merging into umber towards the apex ; the caudal tuft ochreous. ♀ Exp. al. 6-6½ lin.

A scarce species, and apparently local. It is very closely allied to *Eup. angustana*, and with difficulty distinguished from it ; it differs, however, in having a *coarse, broad, curved, oblique, dull ochreous and umber streak across the apical angle* : hence the name "*curvistrigana*." The central fascia is *widest on the costa*, and the *costa itself more rounded* than in *angustana*.

The imago appears in May and June. It has been captured by Mr. H. Tompkins near Lewes in Sussex, among mixed growth ; and by Mr. P. H. Vaughan near Bristol, among young Ash trees.

9. *angustana*, Hüb. Alis anticis albidis, subargenteis, nebulis ochraceis, medio fascia irregulari, alteraque ad apicem cinereo pallide brunneo, cæruleoque variis ; posticis cinereis subtus cinereo punctatis. ♂ Exp. al. 5-6 lin.

Head : over and behind the eyes ochreous, on the vertex primrose-colour. Face primrose-colour. Eyes black. Palpi as long as the head, above and between pale primrose-colour ; at the sides and beneath inclining to ochreous. Antennæ fuscous. Thorax ochreous in front, primrose-colour on the vertex, crested behind. Patagia ochreous, paler at the apex. Anterior wings very glossy, pale straw- or primrose-colour, clouded with ochreous, with umber and rich brown markings in the middle and at the apex. The base clouded ochreous. Before the middle is a mottled umber fascia, very irregular, undefined and indented through two-thirds of its course, then well-marked to the dorsal margin, where it terminates in an oblong, quadrate patch ; it is wide and suffused at its origin, constricted at the middle, and edged anteriorly towards the costa with lustrous blue scales. Beyond this fascia, but close to it and the dorsal margin, is a dusky ochreous patch, followed by another of similar colour, in the apical region. The apical margin broadly umber, speckled with black ; the apex ferruginous. The costa and dorsal margin finely speckled : on the latter, near the anal angle, is a small sharply-defined, somewhat triangular spot. Apical scales dark umber, with iron-grey bases. Cilia umber at the apex, the remainder dark iron-grey, sometimes mottled with dusky ochreous. Posterior wings dark grey beneath, mottled with umber ; above with a subdued gloss, rich fuscous, palest at the base. Marginal scales glossy, fuscous, with dull ochreous bases. Cilia dusky grey. Abdomen glossy, rich fuscous ; the apex dull ochreous. ♀ Exp. al. 6-7 lin. Anterior wings marked as in the ♂, but richer in the colouring.

A common species ; variable in size, and very so in colour ; closely resembling *Eup. curvistrigana*, but *wants the curved streak*

across the apical angle, and the central fascia is NOT widest on the costa.

The imago appears in June and July, especially in heathy places. It occurs in the woods round London, at Dover, in Devonshire, in the New Forest, in Cheshire, north of England, North Wales; also in Scotland; in Ireland it occurs near Belfast.

10. *notulana*, Zell. Alis anticis albidis, nebulis pallidis, apice subreticulatis, medio fascia obliqua, altera curva ad apicem fuscis; costa strigulis fuscis; posticis fuscis, subtus cinereo-reticulatis.
♂ Exp. al. 5-5½ lin.

Head and face dirty white, the former inclining to buff or cream-colour behind the eyes. Eyes black. Palpi longer than the head; dirty white above and between, pale ochreous at the sides and beneath. Antennæ pale fuscous. Thorax and patagia fuscous, the latter cream-colour at the apex. Anterior wings glossy, pale, whitish drab, with fuscous markings speckled with umber. The base clouded with fuscous, especially towards the costa. In the middle is an oblique, fuscous, streaky fascia, not sharply defined on either edge, speckled with umber, mostly so at the middle, and towards the dorsal margin. Towards the apex is a broad, clearly-defined, somewhat curved band, which reaches the anal angle. At the apex are two or three faint fuscous streaks. A faint, somewhat defined fuscous patch lies between the apical band and the central fascia. On the dorsal margin, near the anal angle, is a small triangular umber spot. The costa spotted with umber to the middle. The apical region, in certain aspects, has a reticulated appearance. Apical scales pale, fuscous, with whitish drab bases. Cilia pale drab. Posterior wings grey, with a slight violet tinge. Marginal scales fuscous, with drab bases. Cilia drab. Abdomen fuscous, palest at the base; the caudal tuft straw-colour. ♀ Exp. al. 5-5½ lin.

A common species; very like *Eup. nana* in size and colour, but distinguished from it by the *reticulated appearance of the anterior wings, especially of the apical region.*

The imago appears in June and July. It flies for a very short period before sunset, among Rushes, *Carex padulosa*, &c., by the sides of ditches, and marshy places. It occurs in plenty in Devonshire, Gloucestershire, Cheshire, and on the banks of the Yar, in the Isle of Wight.

11. *griseana*, Haw. Alis anticis rufo-cinereis, basi fascia pallida, medio altera obliqua, tertia ad apicem indistincta, ochraceo-fuscis; posticis griseis. ♂ Exp. al. 5-6 lin.

Head dull ochreous, palest on the vertex. Face pale ochreous, or

straw-colour. Eyes black. Palpi longer than the head; above, between, and beneath, straw-colour, dull ochreous at the sides. Antennæ pale fuscous at the base, pale ochreous. Thorax and patagia dull, ochreous drab. Anterior wings pale drab, with a pinkish tinge and fuscous markings speckled with umber. At the base is an oblique, pale fuscous, streaky patch, darkest towards the dorsal margin. At the centre of the costa commences a broad oblique fascia; its anterior edge undulate, its posterior extending at right angles with the costa to the centre of the disk, there forming an obtuse angle, by receding and attaining the dorsal margin in an oblique direction; in colour this fascia is darkest posteriorly below the angle. A broad band originates near the apex; darkest on the costa, and speedily merging into the ground-colour of the wing, but in certain aspects its course may be traced to near the anal angle. The costa is speckled with pale fuscous, and the dorsal margin with pale umber, as is also the apical margin. Apical scales pale ochreous. Cilia pale drab. Posterior wings fuscous, the base greyish. Marginal scales and cilia drab. Abdomen fuscous, the apex drab. ♀ Exp. al. $5\frac{1}{2}$ – $6\frac{1}{2}$ lin.

An uncommon species; scarcely so large as *Eup. angustana*, but in colouring similar to *Eup. Vectisana*, and still more closely resembling *Eup. sub-roseana*.

The imago appears in July and August, at Darenth Wood, St. Osyth's in Essex, and in Sussex; at Probus in Cornwall, at Lewisham, and various places round London. It frequents *Inula dysenterica* (Fleabane).

12. **ruplicola**, Curt. Alis anticis rufo-cinereis, nubilis subochraceis; fascia media, altera apicem versus ochraceis, fusco-strigatis; costa punctis fuscis; posticis brunneo-fuliginosis. ♂ Exp. al. $5\frac{1}{2}$ lin.

Head straw-colour on the vertex, pale, dusky ochreous behind the eyes. Face pale straw-colour. Eyes black. Palpi longer than the head; above and between straw-colour, at the sides and beneath ochreous. Antennæ fuscous. Thorax ochreous, mixed with dusky or iron-grey. Patagia iron-grey at the base, ochreous at the apex. Anterior wings dull, pale drab, clouded with pale ochreous, with darker ochreous markings, speckled or irrorated with iron-grey. Costa from the base to the middle clouded with iron-grey. Base clouded with pale ochreous. At the middle of the costa commences an oblique ochreous fascia, broad and nearly isometric; its edges irrorated with iron-grey, and most defined on the dorsal margin. A similar-coloured, curved, but narrowish band, lies towards the apex, originating on the costa, diminishing in width as it approaches the anal angle. A large ochreous cloud occupies the whole apical region. The principal markings with a border of the ground-colour; near the anal angle, on the dorsal margin, is a small, sharply-defined, triangular spot. Costa spotted with fuscous throughout, especially

at and beyond the middle. Apical scales fuscous, mixed with ochreous. Cilia paler. Posterior wings dull, fuscous, inclining to umber. Marginal scales fuscous, their bases ochreous. Cilia dusky drab. Abdomen fuscous, the apex dusky ochreous. ♀ Exp. al. $5\frac{1}{2}$ –6 lin. Anterior wings marked as in the ♂, but darker, and more suffused with iron-grey.

Not common; somewhat resembling *Eup. griseana*, being of the same size, but darker in colour, and may be distinguished from it by the ochreous-coloured cloud in the apical region.

The imago appears in July, and occurs at Dover, at Brislington; in Cheshire, in the Cambridgeshire Fens, and other places.

13. *Vectisana*, Westwood. Alis anticis nitidis rufo-cinereis fusco-strigatis; medio fascia obliqua, macula pallidiori ad apicem costali fuscis; posticis cinereis. ♂ Exp. al. $4\frac{1}{2}$ lin.

Head ochreous at the sides, primrose-colour on the vertex. Face primrose-colour. Eyes black. Palpi as long as the head; above and between primrose-colour, at the sides and beneath inclining to ochreous. Antennæ fuscous, darker at the base; the basal joint clothed with pale ochreous scales. Thorax dull brown. Patagia slightly paler. Anterior wings glossy, drab; the base clouded with fuscous. At the middle of the costa is a broad, curved, fuscous fascia, which attains the dorsal margin before the middle. Crossing the apical angle is another mark, also fuscous, dilating in its centre. At the anal angle are one or two small fuscous clouds, and a few similar-coloured streaks lie along the apical margin. Apical scales drab, alternated with fuscous. Cilia drab. Posterior wings and marginal scales pale fuscous, the latter with drab bases. Cilia drab. Abdomen fuscous, the caudal tuft drab. ♀ Exp. al. $4\frac{1}{2}$ lin. Anterior wings of the same colours, but rather more distinctly marked than in the ♂.

Local, and in but few cabinets. In general appearance it very much resembles *Eup. rupicola*, but is much smaller, and deficient of the ochreous cloud at the apex of the anterior wings. It is perhaps still more closely allied to *Eup. griseana*, which it resembles, by having the clouded mark on the dorsal margin at the base.

It occurs near Ryde, in the Isle of Wight, where it was first captured, in August 1843, by Mr. S. Stevens; and the first notice of it is in Westwood and Humphrey's 'British Moths and their Transformations,' vol. ii. p. 176, pl. 100, fig. 15, under the name of *Cochylis Vectisana*.

14. *affinitana*, Douglas. Alis anticis nitidis, albidis, nebulis ochraceis fascia obliqua medio punctisque brunneis; posticis violaceo-griseis. ♂ Exp. al. $5\frac{1}{2}$ –6 lin.

Head drab, inclining to rufous. Face paler. Eyes brown. Palpi longer than the head; drab above at the apex, sides and base dusky. Antennæ fuscous. Thorax and patagia dusky drab; the latter paler at the apex. Anterior wings shining, drab, with a very pale ochreous cloud on the costa and towards the apex, with a reddish-brown central fascia, and specklings of the same colour on the costa and in the apical region. On the dorsal margin, at the middle, commences the central fascia, which is oblique, and does not attain the costa. A small, sharply-defined, triangular mark lies near the anal angle, on the dorsal margin. Apical scales and cilia concolorous with the wing, or rufescent. Posterior wings grey, with a subdued gloss and a violet tinge. Marginal scales rufescent, the bases drab. Cilia drab. Abdomen dusky drab, the caudal tuft rufescent. ♀ Exp. al. $5\frac{1}{2}$ –6 lin. Similar to, but in general colour *darker* than, the ♂.

Rare in cabinets. Captured by Mr. J. W. Douglas in the salt-marshes at St. Osyth's in Essex, in July 1845, and in the following year by Mr. S. Stevens on the banks of the Thames below Gravesend. It varies considerably in colour, and somewhat resembles *Eup. griseana* and *Eup. Vectisana*. It is *smaller than the former, and considerably larger and much paler than the latter; in general appearance it comes nearer to Eup. subroseana, but the central fascia is not so distinctly marked.*

15. *flaviciliana*, Doubleday. Alis anticis roseis, fascia abbreviata obliqua saturatori medio marginis dorsalis; ciliis subochraceis vel flavis; posticis griseis. ♂ Exp. al. 6 lin.

Head and face cream-colour. Eyes black. Palpi longer than the head, cream-colour; pale fuscous at the sides. Antennæ pale fuscous. Thorax and patagia pale ochreous. Anterior wings dull, *cream-colour*, with the costa broadly, and the apical region wholly, *bright rose-colour* on the dorsal margin; before the middle is a broad, similar-coloured, oblique, abbreviated fascia, darkest and broadest at its origin. Apical scales and cilia ochreous. Posterior wings pale grey. Marginal scales pale fuscous, the bases pale drab. Cilia glossy, pale drab, with a yellowish tinge. Legs straw-colour. Abdomen and the caudal tuft glossy, pale grey. ♀ Exp. al. $6\frac{1}{2}$ lin.

A very rare species, but apparently not variable. It comes nearest in appearance to *Eup. roseana*, but is somewhat larger, and may easily be distinguished from it by *the cream-coloured ground of the anterior wings, and by the yellower cilia.* It is in the cabinets of Messrs. Bond, Doubleday, Douglas, and Edwin Shepherd.

It has occurred at Sanderstead Downs, Epping (?), Isle of Wight, &c.

16. *roseana*, Haw. Alis anticis roseis; fascia obliqua abbreviata medio marginis dorsalis fusca; ciliis ochraceis pallidis; posticis griseis. ♂ Exp. al. 4-6 lin.

Head varying from rose-pink to cream-colour, paler on the vertex. Face of the same colour as the head. Eyes black. Palpi longer than the head, varying from rose-pink to cream-colour; in the paler shades somewhat ochreous at the sides and beneath. Antennæ pale fuscous. Thorax varies from pale rose-pink to drab and cream-colour. Patagia rose-pink or ochreous at the base, paler at the apex. Anterior wings dull, *bright rose-colour*, particularly on the costa and apical margin; the dorsal margin frequently of an ochreous tinge. Before the middle of the latter is a broad, oblique, fuscous fascia, darkest at its origin, anteriorly and gradually softening off, and slightly dilating as it approaches the costa. Within the anal angle is a small, distinct, triangular fuscous patch. The apical half of the costa bears faint indications of markings; the apical region sometimes faintly clouded with grey. Apical scales pale ochreous, with a darker line running through. Cilia pale ochreous, sometimes mottled with dark brown, particularly towards the anal angle. Posterior wings pale grey. Marginal scales pale drab, with still paler bases. Cilia paler drab. Abdomen dark grey, with the caudal tuft drab. ♀ Exp. al. 6-7 lin. Anterior wings marked as in the ♂, but less rich in colour; the dull and ochreous portions more apparent.

Common in nature, among Teazles; variable in size and in the intensity of its colours. It most resembles *Eup. flaviciliana*, is of the same size, but *distinguished from it by the ground-colour, being rose-pink instead of cream-colour, and the cilia are more ochreous than yellow.*

The imago appears from May to August, and occurs where the *Dipsacus sylvestris* (the Wild Teazle) abounds.

The larva is 5 or 6 lines long, and may be found in the autumn, winter, and spring months, up to April; it is of a light green-colour, growing paler posteriorly; in *shape and habits* similar to the larva of *Antithesia Gentianana*, which is yellowish white. The head and shield are shining and black; the latter with its fore-margin and the dorsal line green; the spots oval, raised, and shining; the anal plate smoky black or brown, and shining. When young it is of a *bright green* colour, and darker than in its adult state, and feeds in the seeds of the above-named plant, burrowing galleries among them; before attaining its full dimensions, it eats its way into the centre of the Teazle-head, spinning a silken web over the entrance; it then feeds on

the pith, and at the end of April, or beginning of May, goes into pupa at the top of the stem, first spinning a loose white silken web.

17. *subroseana*, Haw. Alis anticis fusco punctatis; ante medium marginis dorsalis fascia obliqua abbreviata fusca; posticis griseis, subtus cinereo punctatis. ♂ Exp. al. 6 lin.

Head and face pale drab. Eyes brown. Palpi longer than the head; pale drab, dusky at the base. Antennæ pale fuscous, drab at the base. Thorax pale drab. Patagia inclining to fuscous. Anterior wings pale drab, with fuscous specklings, and an ochreous, fuscous, oblique, abbreviated fascia. Costa speckled with pale fuscous throughout; the base of the wing clouded with dusky, and the apical region with fine fuscous specklings, arranged somewhat in streaks. Before the middle of the dorsal margin originates the central fascia, which is darkest at its commencement, dilating slightly towards its apex. Apical scales fuscous. Cilia pale subochreous. Posterior wings pale grey, with a slight ochreous tinge, and having a mottled appearance, from the speckled under-surface showing through. Cilia white, glossy. Legs pale straw-colour, or whitish. Abdomen pale fuscous; the caudal tuft slightly ochreous. ♀ Exp. al. 6-6½ lin.

An uncommon species, and not liable to variation. Allied to *Eup. roseana*, but distinguished from it by the *absence of the rosy tints of that insect*. It likewise bears a superficial resemblance to *Eup. affinitana*, *griseana*, and *Anthemidana*. From the first it may be separated by the more strongly-expressed central fascia; from the second by the absence of the small pale basal patch; and from the last by the *nearly entire* central fascia.

The imago occurs mostly in the north of England, and in Scotland, among *Colluna vulgaris* (Common Heather), in sub-alpine situations.

18. *Anthemidana*, Curtis. Alis anticis albido-roseis nubilis cinereis; fascia medio marginis dorsalis obliqua abbreviata; macula apicem versus strigae costali ferrugineis; posticis pallide griseis. ♂ Exp. al. 4-5 lin.

Head and face cream-colour, inclining to rosy. Eyes black. Palpi as long as the head; above pale cream-colour, dusky ochreous at the base and at the sides. Antennæ fuscous. Thorax and patagia pale cream-colour, irrorated with cinereous. Anterior wings glossy, pale rosy colour, with pale fuscous (inclining to ferruginous) markings. The costa, at the base, is cinereous, and speckled with the same colour throughout, especially *at* and *beyond* the middle; some similar-coloured nebulae lie towards the anal angle. Before the middle of the dorsal margin arises an oblique ferruginous fascia,

darkest at its origin, sharply defined, but does not *quite* attain the costa; in the apical region is a spot, and an abbreviated streak on the costa, both of the same colour. Apical scales tipped with black. Cilia inclining to ochreous. Posterior wings with a subdued gloss, pale grey. Marginal scales grey, with cream-coloured bases. Cilia paler, grey. Abdomen glossy, grey; the caudal tuft paler.

An uncommon species; first noticed by Mr. John Curtis, who bred it from larvæ feeding in the flower-heads of *Anthemis cotula*. It is *smaller than* *Eup. nana*, *but in colours and markings more resembles* *Eup. subroseana*.

The imago appears in July and August, and occurs at Charlton sandpit. We are not aware of any other locality.

19. *ruficiliana*, Haw. Alis anticis rufo-plumbeis, medio marginis dorsalis fascia media obliqua abbreviata; apice ciliisque rufis; posticis gris. ♂ Exp. al. $5\frac{1}{2}$ -6 lin.

Head and face dull grey, the latter somewhat silvery. Eyes black. Palpi longer than the head, silvery grey above and between, ferruginous at the sides and beneath. Antennæ fuscous. Thorax and patagia mouse-colour, with a brownish tinge, the latter darker at the base. Anterior wings dull dark grey, with a pale reddish tinge, irrorated with dusky atoms, especially at the apical region. At the middle of the dorsal margin arises an oblique, broad, pale chocolate- or dull brick-red-coloured fascia, softening and slightly dilating towards the costa. Near the anal angle is a small, similar-coloured, sharply-defined triangular patch. The costa, in some specimens, with faint maculations. Apical scales iron-grey, with a pinkish tinge. Cilia pale reddish ochreous, or sordid pink. Posterior wings shining, grey, narrowly edged with fuscous. Marginal scales pale grey, darkest at the apex. Cilia paler. Abdomen dark grey, especially towards the apex, the caudal tuft pale ochreous. ♀ Exp. al. 5 lin. Anterior wings paler than in the ♂.

An uncommon species, and apparently somewhat local; variable in size and colour. Allied to *Eup. roseana*, and *subroseana*, but much smaller, of more sombre appearance than either, and *distinguished from both by its general darker tints, and by the reddish flush in the cilia*.

The imago appears in May and June, occurring at Mickleham, Lewes, near Guildford, &c.

The larva is yellowish white, with a shining black head; shield dark grey, with a pale dorsal line; spots pale grey or olive; anal segment constricted.

Genus VIII. LOZOPERA, STEPHENS.

Palpi longer than the head, ascending, remote, diverging; basal joint slender, truncate; apical slender, club-shaped, exposed, as long as the basal; middle slightly arcuated, thickest beyond the middle, three times as long as the apical. Maxillæ moderately stout, as long as the palpi. Thorax stout, subovate. Anterior wings elongate, in some cases more than three times the width (*L. Francillana* and *dilucidana*); costa straight, or very slightly arcuated; apex acute; apical margin obliquely truncate; dorsal margin very slightly rounded; cilia at the anal angle produced. The costal vein reaches to the middle of the margin. The subcostal nervures equidistant. Discoidal cell capacious, widest beyond the middle, not proceeding two-thirds along the wing; the apical nervures extended. Posterior wings elongate; apex obtuse; apical margin very concave; basal angle slightly produced. Abdomen slender; stouter in the ♀, a small tuft at the apex in the ♂.

The insects in this genus have the anterior wings pale yellow, or primrose-colour, marked with fasciæ which lie parallel to the apical margin. In general appearance not far removed from *Eupæcilia*, but in stature generally larger, some of the species (*straminea*, *alternana*) considerably so. Like the preceding genus, the larvæ are not sufficiently known for the purposes of classification, but are probably all internal or seed feeders.

There are five British species in this genus, which are thus tabulated:—

- A. Anterior wings with oblique strigæ, *distinct* and defined.
- | | |
|---|-------------|
| a. With two distinct oblique strigæ, <i>that nearest the base abbreviated</i> | Species . 1 |
| b. With two distinct oblique strigæ, <i>both entire</i> | Species . 2 |
| c. With two distinct oblique strigæ, <i>both interrupted</i> | Species . 3 |
- B. Anterior wings with oblique strigæ, *indistinct* or *interrupted* Species 4-5

1. *dilucidana*, Steph. Alis anticis pallide flavis, ante medium marginis dorsalis striga abbreviata, obliqua; pone altera quæ costam attingit, rufo-brunneis; posticis griseis. ♂ Exp. al. 6½ lin.

Head and face straw-colour. Eyes black. Palpi as long as the head, straw-colour. Antennæ pale fuscous. Thorax and patagia straw-colour. Anterior wings straw-colour, with the costa very narrowly edged and maculated with ferruginous to beyond the middle, and two oblique ferruginous streaks parallel with the apical margin; the anterior commencing on the dorsal margin one-third from the base, and *extending only to the middle of the wing*; the

posterior commencing within the anal angle, and attaining the costa. Apical scales straw-colour. Cilia paler. Posterior wings pale pearly grey, edged with fuscous. Marginal scales and cilia glossy, white. Abdomen dark fuscous, the apex straw-colour. ♀ Exp. al. $6\frac{1}{2}$ –7 lin.

An uncommon species; constant in colour and marking, but somewhat variable in size. Allied to *L. Francillana*, but smaller, and paler in colour. *The abbreviated anterior streak* is a good distinctive character.

The imago appears in July, frequenting *Umbelliferae*. It occurs at Charlton, Plumstead, Sanderstead Downs, Reigate, and other places around London; at the Isle of Wight, &c.; in Ireland, in the vicinity of Dublin.

The larva feeds in the stems of the *Pastinaca sativa* (the Wild Parsnip).

2. *Francillana*, Fabr. Alis anticis pallide flavis; strigis duabus obliquis rufo-brunneis; costa basi a medio brunneo-punctata; posticis griseis. ♂ Exp. al. $6\frac{1}{2}$ –8 lin.

Head and face straw-colour. Eyes black. Palpi longer than the head, straw-colour above, between, and beneath, slightly brown at the sides. Antennæ fuscous; basal joint clothed with straw-coloured scales. Thorax and patagia straw-colour. Anterior wings straw-colour, with the basal half of the costa narrowly edged and maculated with dull ferruginous colour, and *two very oblique entire ferruginous streaks* parallel with the apical margin, one commencing in the dorsal margin, at one-third from the base and attaining the middle of the costa, the other near the apex. Apical scales and cilia straw-colour. Posterior wings very pale pearly grey, narrowly edged with fuscous. Marginal scales and cilia whitish. Abdomen grey, the apex straw-colour. ♀ Exp. al. 8–9 lin. The colouring of the anterior wings warmer in tint than in the ♂.

An uncommon species; constant in colour and marking, but variable in size. Allied to *L. dilucidana*, but distinguished from it by the *anterior streak attaining the costa*.

The imago appears in July and August amongst *Daucus Carota*, and occurs at Darenth, Dover, on the railway bank near Forest Hill, Croydon, Riddlesdown, Sanderstead, Charlton, near Guildford, and other places.

A larva, supposed of this species, is to be found during the autumn and spring months, in the stems of the above-named plant. It is from 3 to 4 lines in length, sluggish, and of a dirty white or pale yellow colour; its head is shining, of chestnut-colour; the shield very transparent, shining, somewhat rugose, with hazel-coloured clouds at the base; the spots on the

anterior segments are small and of the same colour as the body, increasing in size and becoming grey in colour towards the posterior extremity; the anal segment is constricted, and bears an ovoid umbreous patch, preceded by a transverse band of the same colour on the twelfth segment.

3. *Smeathmanniana*, Fabr. Alis anticis stramineis, strigis duabus obliquis interruptis, rufo-brunneis; posticis *maris* griseis; *fœminæ* cinereis. ♂ Exp. al. $6\frac{1}{2}$ –7 lin.

Head primrose-colour, palest on the vertex. Face primrose-colour. Eyes black. Palpi as long as the head, pale primrose-colour above and between, darker at the sides, and dusky beneath. Antennæ pale brown; basal joint clothed with primrose-coloured scales. Thorax pale primrose, the crest darker. Patagia pale primrose. Anterior wings pale primrose-colour, with oblique ochreous, or ochreous brown streaks and spots. The basal half of the costa very narrowly edged with iron-grey, or ochreous brown. On the dorsal margin, before the middle, and within the anal angle, are two abbreviated oblique streaks of dull ochreous (sometimes brown) colour, the anterior one attaining the middle of the wing, and the posterior sometimes interrupted, or consisting only of a triangular patch on the margin. The apical half of the costa marked with three quadrate pale fuscous spots (in some specimens less distinct and ochreous). Apical margin irrorated with pale fuscous. Apical scales and cilia primrose-colour, the latter paler. Posterior wings pale grey, fuscous at the apex and costal margin. Marginal scales glossy, grey, with luteous bases. Cilia white. Abdomen dark fuscous, the apex pale ochreous. ♀ Exp. al. $8\frac{1}{2}$ –9 lin. Anterior wings warmer coloured than in the ♂.

Far from common; variable in size, and slightly so in the intensity of the ground-colour of the anterior wings. Is allied to *L. Francillana* and *L. dilucidana*, larger than either, but differs from both by having the oblique streaks abbreviated or interrupted.

The imago appears in May and June, and occasionally in July and August. It occurs at Darenth Wood, Epping Forest, Barnes Common, and generally round London; also near Dover; in Cheshire, &c.

The pupa is rich amber-colour, dull and immaculate, and about $2\frac{1}{2}$ lines long.

The larva feeds in the flowers of *Anthemis cotula*.

4. *straminea*, Haw. Alis anticis stramineis, striga ante medium marginis dorsalis obliqua abbreviata fulva; posticis *maris* griseis; *fœm.* cinereis. ♂ Exp. al. $8\frac{1}{2}$ –9 lin.

Head and face pale primrose. Eyes black. Palpi longer than

the head; pale primrose above and between, pale ochreous at the sides and beneath. Antennæ pale brown. Thorax and patagia pale primrose. Anterior wings primrose colour, with an ochreous tinge, and a pale ferruginous oblique streak on the dorsal margin, and numerous paler markings along the costa. Costa pale ochreous, irrorated with grey scales on the basal half; the apical half mottled with pale ochreous. Before the middle of the dorsal margin arises the oblique ferruginous brown streak, which attains the middle of the disk, and sometimes has one or two small castaneous spots on its anterior edge. Within the anal angle, on the dorsal margin, is a triangular brown patch. The dorsal margin is maculated with brown; apical margin narrowly ochreous. The pale portions of the wing clouded with ochreous, and irrorated with grey atoms. Apical scales and cilia pale primrose. Posterior wings very pale grey, merging narrowly into pale fuscous at the margins. Marginal scales whitish, with a pale fuscous tinge at the apex. Cilia whitish. In fine specimens a few minute, slightly shining tufts of elevated scales are visible about the middle of the wing. Abdomen drab; a pale primrose-coloured tuft at the apex. ♀ Exp. al. $7\frac{1}{2}$ –8 lin. Anterior wings much paler and more mottled than in the ♂; costa and dorsal margin maculated throughout with dusky spots, and *the oblique dorsal streak faintly indicated*; posterior wings *darker*.

An uncommon insect; variable in size, and also in the intensity of its colouring and markings; closely allied to *L. alternana*, but is smaller, and has *its anterior wings less mottled, and the abbreviated streak narrower and more defined*.

The imago appears in May and June, and occurs at Darenth Wood, near Dover, the Isle of Wight, in Devonshire, at Probus in Cornwall, in Yorkshire, Cheshire, and other places in the north of England; also in the vicinity of Edinburgh, and at Belfast in Ireland.

5. *alternana*, Steph. Alis anticis stramineis nebulis ochraceis; fasciis duabus irregularibus (*fœm.* punctis atris) fusciscentibus; posticis *maris* pallide griseis; *fœm.* subcinereis. ♂ Exp. al. $10\frac{1}{2}$ –12 lin.

Head and face primrose-colour. Eyes black. Palpi twice the length of the head; above primrose-colour, slightly darker at the sides and beneath. Antennæ primrose-colour. Thorax and patagia pale ochreous. Anterior wings primrose-colour, clouded with ochreous, and a series of amber spots towards the dorsal margin. The base is tinged with ochre; the costa maculated with the same colour, and irrorated with dusky atoms, especially towards the apex; the apical margin and apical portion of the wing irrorated in the

same manner. Towards the centre of the wing is an ochreous cloud bearing a number of umber spots, which are somewhat elevated into knots. The dorsal margin faintly maculated with dusky spots. Apical scales and cilia primrose-colour. Posterior wings glossy, fuscous, grey. Marginal scales pale fuscous, especially towards the apex. Cilia straw-colour. Abdomen straw-colour, inclining to ochreous at the base and apex. ♀ Exp. al. 11–13 lin., of richer colour than the ♂, and *the markings more indicated.*

Not uncommon on the south coast of England; variable in size and colour; allied to *L. straminea*, but *its larger size and more mottled anterior wings distinguish it.*

The imago appears in June and July, and occurs at Southend, near Deal, Dover, Folkestone, and some other places.

Genus IX. XANTHOSETIA, STEPHENS.

Palpi twice the length of the head, slightly ascending, compressed, adpressed. Basal joint stout, truncate; apical slender, cylindrical, not so long as the basal; middle arcuated, thickest in the middle, five times as long as the apical. Maxillæ stout, not so long as the palpi. Thorax robust, subovate, trigonate, and with a small tuft behind. Anterior wings: length more than twice the width; costa regularly arcuated; apex acute; apical margin obliquely truncate or slightly concave; dorsal margin rounded. The costal vein reaches the margin about the middle. Subcostal nervures not equidistant. Discoidal cell capacious, widest before its apex, lying towards the middle of the wing, and extending only three-fifths its length. Posterior wings elongate; apex obtuse; apical margin concave, anal angle slightly produced. Abdomen long and slender, stouter in the ♀; a small tuft at the apex in both sexes.

The insects of this genus may be known by the bright yellow colour of the anterior wings, and the markings *not being parallel* with the apical margin; they are above the average size, and have the palpi very long and adpressed. The larvæ are most probably root-feeders (one known to be so). The British species are two in number, and there are two or three others occurring on the Continent.

The British species are thus arranged:—

- | | |
|--|-------------|
| A. Anterior wings <i>without</i> a broad ferruginous patch at the apex | Species . 1 |
| B. Anterior wings <i>with</i> a broad ferruginous patch at the apex, bearing a round yellow spot | Species . 2 |

1. *hamana*, Linn. Alis anticis *maris* flavis; *fœminæ* sulphureis; litura hamata ad angulum analem, punctis strigisque fulvis vel ferrugineis; posticis cinereis. ♂ Exp. al. 10–11½ lin.

Head and face lemon-colour. Eyes black, with a velvety appearance. Palpi twice the length of the head, lemon-coloured above and between; ferruginous at the sides and beneath. Antennæ fuscous. Thorax and patagia lemon-colour, the latter ferruginous at the base. Anterior wings dull, lemon-colour, with ferruginous marks, more or less numerous and intense in different specimens. Towards the apex is a long ferruginous hook-like mark, with the point directed to the apex, and extending from the anal angle towards the middle of the disk: this mark is frequently almost, and sometimes entirely, obliterated; at others more or less produced towards the apex; the base of the costa, a spot before, and another beyond the middle, pale ferruginous. Near the dorsal margin, one-third from the base, is another spot: this is sometimes produced into a streak, occasionally interrupted and directed towards the apex of the hook-like mark. In some specimens a faint, undulating, ferruginous streak runs near the apical margin. Apical scales lemon-colour, tipped with pale ferruginous, especially towards the anal angle. Cilia lemon-colour, ferruginous at the anal angle. Posterior wings dark, fuscous, clothed with coarse scales. Marginal scales dark, fuscous, with cream-coloured bases. Abdomen fuscous, grey, with the apex lemon-coloured. ♀ Exp. al. 8½–9½ lin. Anterior wings paler in colour than in the ♂, and the markings more dilute and less numerous. Posterior wings paler.

A very common species; variable in size and in markings. It is allied to *X. Zœgana*, but readily distinguished by the long hook-shaped mark originating at the anal angle. The variety *X. diversana*, Hüb., has the disk of the anterior wings rather strongly marked with ferruginous streaks towards the base.

The imago appears from June to August, frequenting Thistles. It occurs throughout the Metropolitan district and other parts of the country. It likewise occurs in the vicinity of Edinburgh, but sparingly.

2. *Zœgana*, Linn. Alis anticis flavis; ante medium puncto, postice ferrugineis, macula rotundata flava; posticis cinereis. ♂ Exp. al. 8–9 lin.

Head and face pale orange. Eyes black. Palpi twice the length of the head; pale orange above, between, and at the base beneath; apex beneath and at the sides ferruginous. Antennæ fuscous. Thorax orange on the vertex, more or less edged at the sides with ferruginous. Patagia at the base and inwardly ferruginous; orange outwardly and at the apex. Anterior wings dull, rich yellow, with

the base of the costa, a conspicuous spot near the middle of the wing towards the dorsal margin, and a broad patch at the apex, all ferruginous: the latter is angulated anteriorly in the middle, and encloses a large round yellow spot. Apical scales ferruginous, with paler bases. Cilia glossy, paler, both merging into deep ferruginous at the anal angle. Posterior wings and marginal scales fuscous, the latter with cream-coloured bases. Cilia glossy, whitish. Abdomen fuscous, the apex pale ferruginous. ♀ Exp. al. $8\frac{1}{2}$ lin. Anterior wings marked as in the ♂; posterior wings darker.

Rather uncommon; constant in marking, but slightly variable in colour. It is allied to *X. hamana*, but readily distinguished from it by the *ferruginous patch at the apex of the anterior wings, enclosing a reniform spot of the ground-colour*. There is one variety, the *X. ferrugana* of Haworth, in which the wings are wholly ferruginous, with the apical mark somewhat darker.

The imago appears from May to August among tall herbage, and occurs at Darent and Coombe Woods, Charlton, Lewisham, Mickleham, and other places round London; also in Hertford, Norfolk and Cambridgeshire; at Probus in Cornwall, in Cheshire, &c.; in Scotland; and at Kilkenny and Belfast in Ireland.

The larva feeds in the roots of *Scabiosa Columbaria*.

Genus X. DAPSILIA, HÜBNER.

Palpi as long as the head, remote, ascending. Basal joint short, stout, cylindrical, truncate; apical slender, obovate, longer than the basal, horizontal; middle ascending, moderately stout, thickest in the middle, nearly three times as long as the apical. Maxillæ as long as the palpi. Thorax stout, ovate. Anterior wings: length exceeding twice the width. Costa slightly arcuated; apex obtuse; apical margin rounded; dorsal margin straight; the costal vein reaches beyond the middle of the costa; subcostal nervures not equidistant. The discoidal cell lies towards the middle of the wing, widest before the apex, but not extending two-thirds its length. Apical nervures extended. Posterior wings elongate; apex obtuse; apical margin concave; anal angle slightly produced; costa thickly ciliated. Abdomen stoutest in the ♀; a small tuft at the apex in both sexes.

There is but one British species in this genus, which, in the character of its markings, seems to locate well with the following (*Argyridia*); but as the larva of the latter is unknown, we think it better to retain a distinct generic name for it; there are,

nevertheless, some structural differences in the palpi, as well as in the form and venation of the wings.

1. *rutilana*, Hüb. Alis anticis aurantiacis; fasciis quatuor æquidistantibus sanguineis cæruleo-variegatis; posticis cinereis. ♂ Exp. al. 5 lin.

Head orange. Face paler. Eyes black. Palpi as long as the head; above ochreous, dull brown beneath. Antennæ dark grey. Thorax orange-colour. Patagia deep ferruginous. Anterior wings glossy, rich orange, with four dull, leaden-lustred streaks, edged with brick-red (in some aspects wholly of the latter colour), one at the base somewhat angulated; a broad curved fascia before the middle, followed by another beyond the middle, something like the letter K; the apical mark wedge-shaped, with the point downwards, and extending from the costa to near the anal angle: this last mark is leaden-blue anteriorly, and brick-red posteriorly. Apical scales brick-red, with orange bases. Cilia long, orange. Posterior wings dark grey. Marginal scales paler, with yellowish bases. Cilia yellowish at and towards the apex, leaden-grey at the anal angle. Abdomen iron-grey, with a small yellowish tuft at the apex. ♀ Exp. al. 5 lin. Anterior wings marked as in the ♂, but warmer tinted.

Not very uncommon amongst Juniper in the south of England; constant in size and colour, but somewhat variable in its markings.

The imago appears in July and August, and occurs at Stoa's Nest and Sanderstead Downs; also at the Downs on the Godstone Road. Its flight is very short and quick, the insect keeping close to the ground.

The larva feeds on the Juniper, living in a web spun over the young twigs. Head hazel-colour, shield paler, both immaculate; body yellow, with a pale-green dorsal vessel; anal segment grey. Habit sluggish.

Genus XI. ARGYRIDIA, STEPHENS.

Palpi longer than the head, somewhat drooping, remote, diverging; basal joint short, pyriform, truncate, drooping; apical horizontal, slender, obovate, as long as the basal; middle curved, ascending, slender, stoutest beyond the middle, four times as long as the basal. Maxillæ as long as the palpi. Thorax robust, ovate, tufted behind. Anterior wings narrow; length exceeds twice the width. Costa nearly straight; apex acute; apical margin obliquely truncate; dorsal margin rounded; cilia produced at the anal angle. The costal vein reaches the margin beyond the middle. Subcostal nervures not

equidistant—all inserted beyond the middle of the subcostal vein. Discoidal cell very capacious, widest before the apex, lying towards the middle of the wing, and extending fully two-thirds its length. Posterior wings elongate; apex obtuse; apical margin very concave; anal angle somewhat produced. Abdomen slender, stouter in the ♀; a small tuft at the apex in both sexes.

The only British species in this genus is distinguished from all other *Tortrices* in our list by the bright pearly, silvery-lustred ground-colour of the anterior wings: in the character of its markings it approaches *Dapsilia*.

The larva is unknown, but supposed to feed on the roots or stems of some herbaceous plant.

1. **dipoltella**, Hüb. Alis anticis argenteo-margaritaceis; fasciis quatuor obliquis æquidistantibus ochraceis; posticis cinereis. ♂ Exp. al. $5\frac{1}{2}$ – $7\frac{1}{2}$ lin.

Head bright ochreous; paler on the vertex. Face pale ochreous. Eyes black. Palpi as long as the head; primrose-colour above and between; ochreous at the sides and beneath. Antennæ drab, annulated with brown; basal joint clothed beneath with ochreous scales. Thorax bright ochreous at the sides, with a narrow, whitish, longitudinal line in the centre; a large black spot behind the crest; the crest bifid, white at the base, and ochreous at the apex. Patagia ochreous; darkest at the base, edged outwardly with white. Anterior wings bright, shining, pearly white, with ochre-coloured, oblique streaks and spots; the costa widely and finely maculated with iron-grey. At the base of the costa is an angulated ochreous patch, followed by four oblique, similar-coloured streaks, all placed in a manner parallel with the apical margin, and extending from the costa to the dorsal margin: that nearest the base is curved, the second furcate on the costa; the third sometimes dilated on the costa and furcate towards the dorsal margin, and at others emitting a branch posteriorly, which branch is sometimes represented by a spot; the last, or apical, streak curves inwards, leaving two semi-lunate, pearly spots on the margin; between the third and last streaks on the costa is a rounded spot, and another one, triangular, within the anal angle on the dorsal margin: all these markings are of deep ochreous, with paler edges, and are dull; in fine specimens giving them the appearance of being *laid on the surface, instead of forming a part of it*. Apical scales ochreous, with pearly bases, the supercostal ones mixed with grey. Cilia pale drab, with a faint rosy hue. Posterior wings dull, dark grey, with a faint violet tinge. Marginal scales paler, with whitish bases. Cilia glossy, white. Abdomen shining, grey; the apex straw-coloured. ♀ Exp. al. $7\frac{1}{2}$ –8 lin.

A rare species ; variable in size and in the form of its markings, which are very inconstant, especially the apical one.

The imago appears in July and August, usually among Thistles, but also among other plants, such as *Origanum vulgare*, Ragwort, Wormwood, &c. It occurs at Charlton Sand-pit, near Croydon, near Guildford, and a few other places.

ADDENDA ET CORRIGENDA.

- Page 2, line 3 from bottom, for **Anticlea trimaculana* read *Hedya trimaculana*.
- 3, line 2 from top, for *Grapholitha Ulicetana* read *Grapholita Ulicetana*.
- 7, line 11 from top, for *Grapholitha* read *Grapholita*.
- 9, line 10 from top, after the words "patch never present" add "except in *Calosetia*."
- 9, line 14 from top, after the word *Lozoperidæ* add "except *Calosetia*."
- 19, line 24 from top, for "about Sallows and Willows" read "among Sallows and Willows."
- 22, line 26 from top, for "fuscous-black and white markings" read "fuscous, black and white markings."
- 36, line 15 from bottom, for "settling in the trunks" read "settling on the trunks."
- 38, line 20 from top, for *Lithographia trimaculana* read *Hedya trimaculana*.
- 58, line 11 from top, for *Bordeau Hangers* read *Bordean Hangers*.
- 59, line 10, 11 from top, for *Anudum phragmites* read *Arundo phragmites*.
- 71, line 22 from top, for "transferred to *Anticlea*" read "transferred to *Hedya*."
- 79, line 11 from bottom, for *Anticlea trimaculana* read *Hedya trimaculana*.
- 83, line 2 from bottom, for *Anchylopusa biarcuana* read *Anchylopera biarcuana*.
- 86, line 21 from top, for *P. solandriana* read *P. Solandriana*.
- 93, line 14 from bottom, for "Species 2-6" read "Species 3-6."
- 98, line 21 from bottom, for "edge somewhat angulated" read "edge somewhat angulated."
- 210, line 22 from top, for *H. Schœf* read *H. Schœf*.
- 215, line 18 from bottom, for "and the intensity of its colours" read "and in the intensity, &c."
- 217, line 4 from top, for "and, owing to the very recent" read "but, owing to the very recent."
- 228, line 18 from bottom, for *D. simpliciana* read *Dicrorampha simpliciana*.
- 244, line 8 from bottom, for *Thiodia citrana* read *Grapholita citrana*.
- 254, top line, for *C. alternana* read *C. alternella*.
- 255, line 13 from bottom, for *C. penziana* read *C. Penziana*.
- 255, line 8 from bottom, for *C. alternana* read *C. alternella*.
- 278, line 17 from top, for *Dipoltella* read *Argyridia*.
- 281, line 17 from top, after the words "acutely truncated apex" add the words "of the anterior wings."
- 299, line 7 from top, for "dorsal magin" read "dorsal margin."
- 319, line 11 from top, for "feed on the roots" read "feed in the roots."

* As the name *Anticlea* has already been used for a genus among the Geometridæ, that of *Hedya* is substituted.



INDEX.

* * In this Index, the figures *with* a * affixed denote the page upon which the Species, Genera, &c. are *described*; those *without* the *, where they are *only incidentally* mentioned.

The synonyms, when quoted, are printed in italics, and the names of the foreign species mentioned in this book in italics with parentheses.

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† See ADDENDA ET CORRIGENDA, p. 321.

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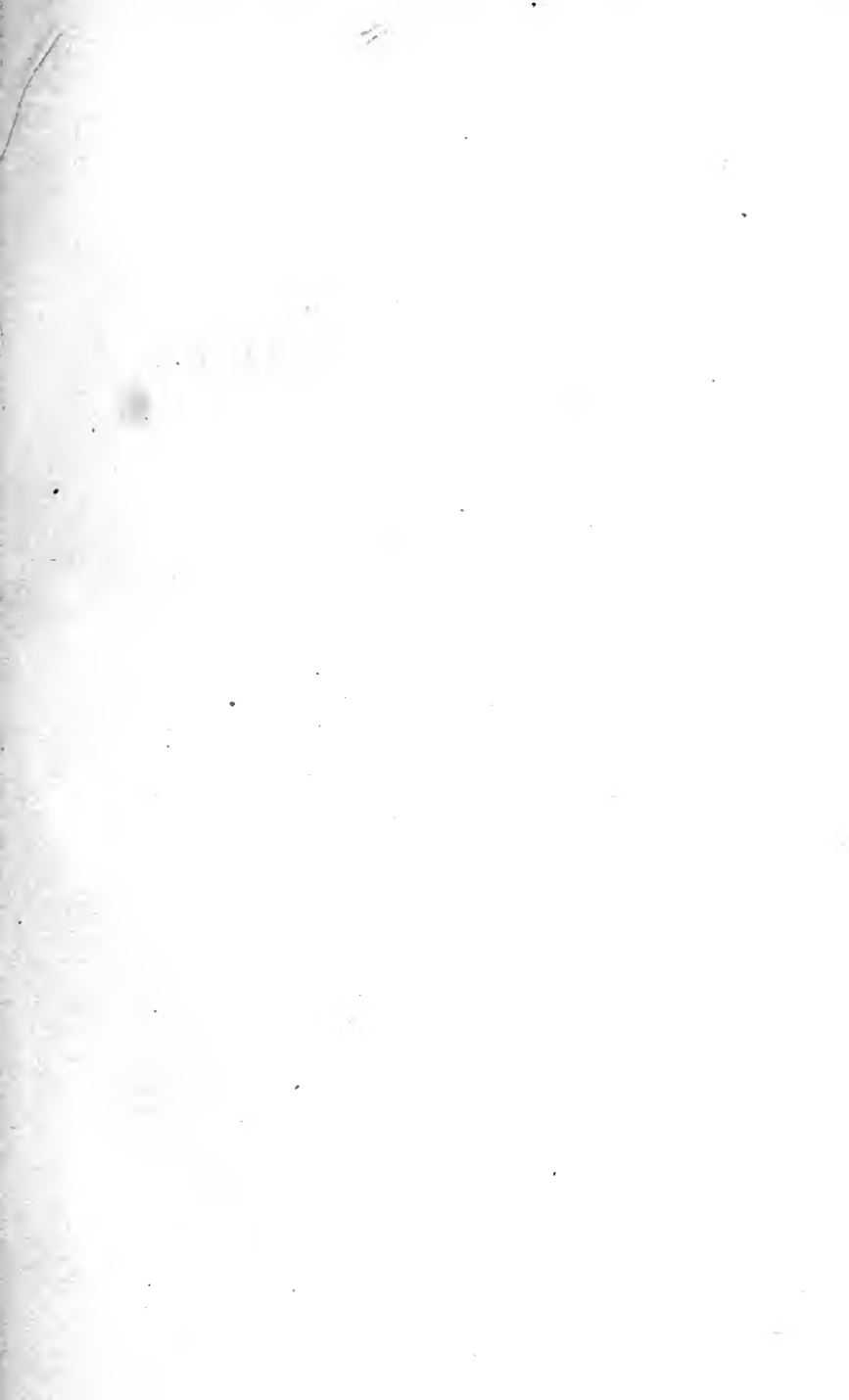
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THE END.



EXPLANATION TO PLATE I.

Family 1. **TORTRICIDÆ.**

- Fig. 1. *Sarrothripa revayana* ♀.
Fig. 2. *Antithesia praelongana* ♀.
Fig. 3. *Tortrix dumetana* ♂.

Family 2. **PLICATÆ.**

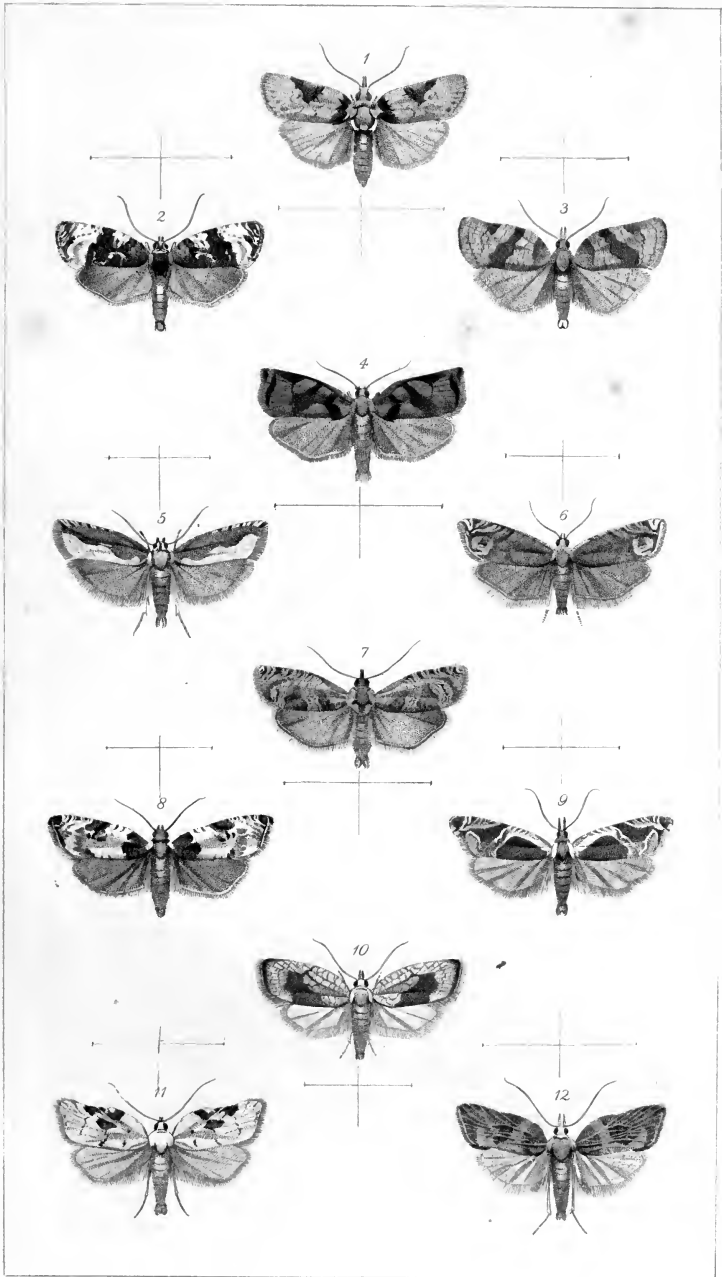
- Fig. 4. *Lozotænia fulvana* ♂.
Fig. 5. *Phlæodes crenana* ♂.
Fig. 6. *Catoptria parvulana* ♂.
Fig. 7. *Halonota turbidana* ♂.

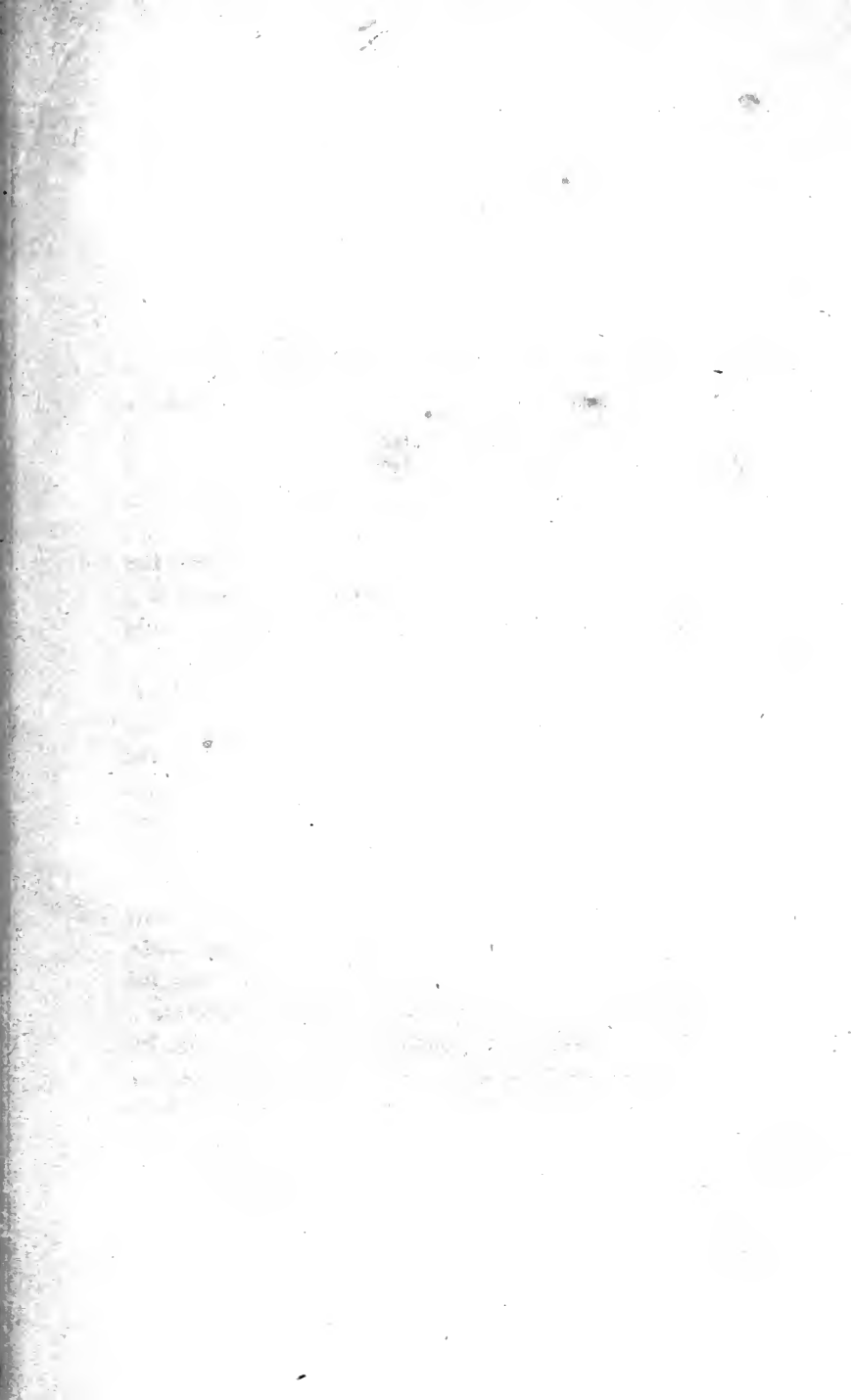
Family 3. **ANCHYLOPERIDÆ.**

- Fig. 8. *Hedya neglectana* ♀.
Fig. 9. *Anchylopera derasana* ♂.
Fig. 10. *Cræsia Forskaleana* ♂.

Family 4. **PERONEIDÆ.**

- Fig. 11. *Oxygrapha Boscana* ♂.
Fig. 12. *Peronea Hastiana*, var. ♂.





EXPLANATION TO PLATE II.

Family 5. **STIGMONOTIDÆ.**

- Fig. 1. *Pœcilochroma Bouchardana* ♀.
Fig. 2. *Stigmonota dorsana* ♂.
Fig. 3. *Asthenia coniferana* ♀.

Family 6. **CARPOCAPSIDÆ.**

- Fig. 4. *Carpocapsa Juliana* ♀.

Family 7. **CNEPHASIDÆ.**

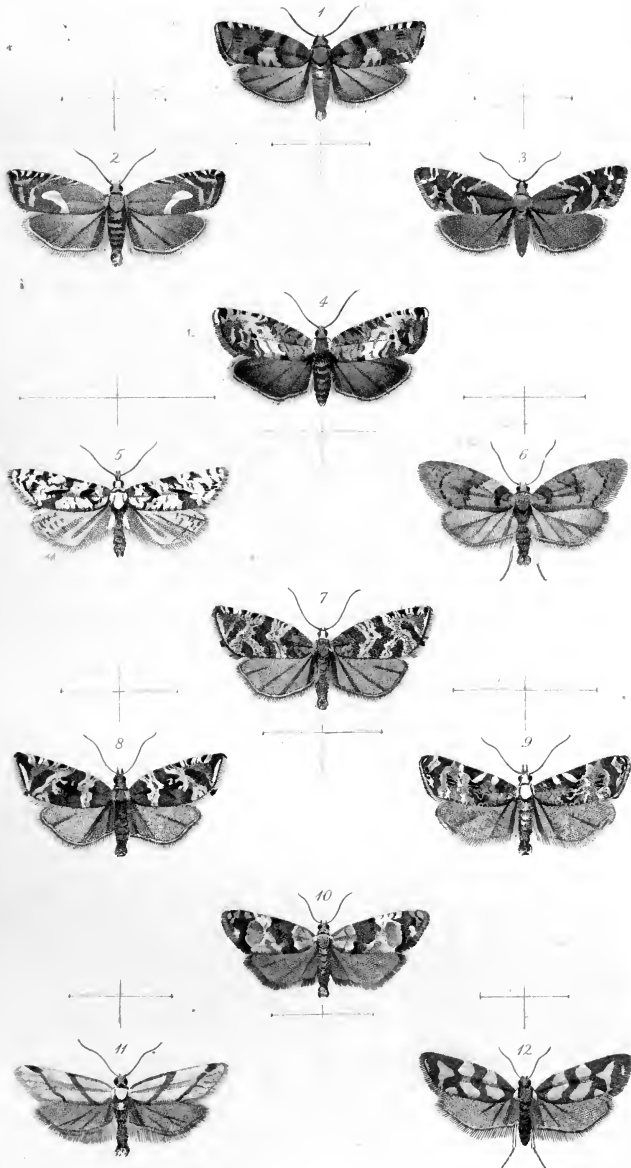
- Fig. 5. *Cnephasia Penziana* ♂.
Fig. 6. ————— *sinuana* ♀.

Family 8. **SERICORIDÆ.**

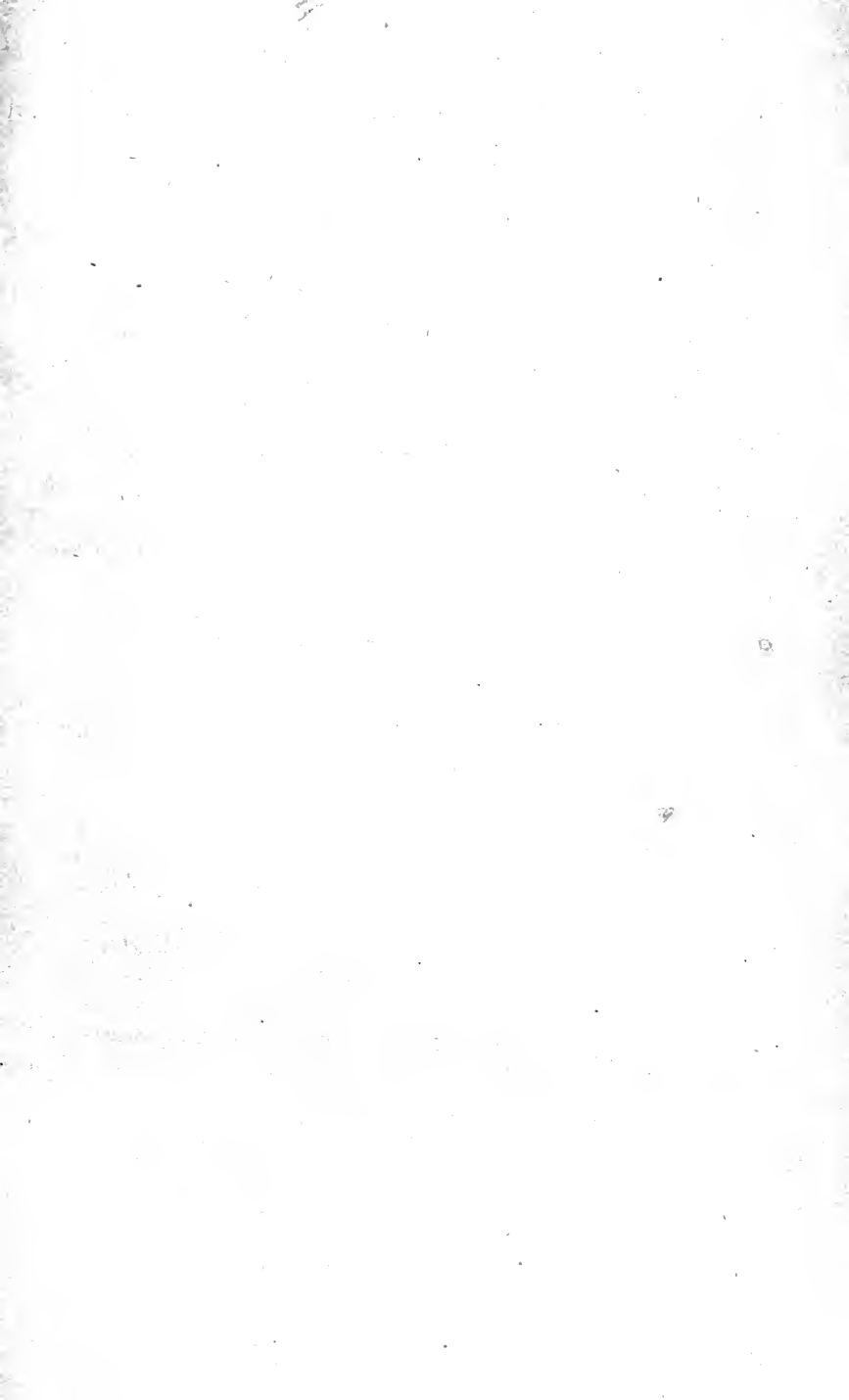
- Fig. 7. *Sericoris conchana*.
Fig. 8. ————— *cespitana* ♀.

Family 9. **LOZOPERIDÆ.**

- Fig. 9. *Phtheochroa rugosana* ♂.
Fig. 10. *Eupœcilia curvistrigana* ♂.
Fig. 11. *Lozopera Francillana* ♂.
Fig. 12. *Dapsilia rutilana* ♀.







EXPLANATION TO PLATE III.

The enlarged figures or diagrams at the top show the varieties which occur in the venation of the wings in the group *Tortricina*.

The anatomy of the ANTERIOR WINGS is divided into Margins, Cells, Veins, Nervures, and Folds.

A. The costa, or costal MARGIN: from the base to the apex.

B. The apical margin: from the apex to the anal angle.

A'. The dorsal margin: from the anal angle to the base.

D. The discoidal CELL, occupying the central portion of the wing.

The VEINS are five in number, and are either independent processes, or serve for the insertion of the nervures.

a. The costal vein: this starts from the base, and proceeds to about the middle of the costa.

b. The subcostal vein: forming the upper edge of the discoidal cell.

c. The apical vein: at the apex of the discoidal cell, joining the subcostal vein to

d. The median vein, which forms the lower edge of the discoidal cell.

e. The dorsal vein, is furcate at the base, and runs more or less parallel with the dorsal margin.

The NERVURES are either external or internal: external when outside the discoidal cell, and internal when within it.

The EXTERNAL NERVURES are usually ten in number (*in Amphisa there are only eight*), and are divided into subcostal, apical, or submedian nervures respectively, from their being inserted in the subcostal, apical, or median veins.

The SUBCOSTAL NERVURES are three in number (*in Amphisa only two*), and are marked 1, 1 a, 1 b, in the diagram.

The APICAL NERVURES are either five or six in number, all springing from the apical vein. *When there are only five* (as in *Amphisa*, *Ditula*, *Grapholita*, &c.), *the first one is invariably furcate; and when there are six, they are all simple*. These veins are marked 2, 2 a, 2 b, 2 d, 2 e, and 2 f in the diagram.

The SUBMEDIAN NERVURE takes its origin at the centre of the median vein, and is marked 3.

Note.—The dotted lines parallel to the first or furcate apical nerve represent the positions of the two simple nervures, when the whole six are present.

There is only one INTERNAL NERVURE, which takes its rise on the subcostal vein, and reaches to the apical vein; thus enclosing a small space or cell.

Note.—Occasionally there is an internal spur (5) on the subcostal vein, towards the base, as in *Phitheochroa*.

The FOLDS are two in number, both represented by dotted lines: one running longitudinally through the centre of the wing, and lying between b and d, the other lying between d and e.

Posterior Wings.

As these organs are *folded* longitudinally in repose, considerable modification in their structure is necessary to that end, as compared with the anterior pair, which are always extended.

The margins, however, are the same, viz. the costal, c, apical and dorsal, n; the apical margin being divided into b, the apical angle, c' the anal angle, and at z is the basal angle.

The venation consists of two portions, separated by the central fold (4): the uppermost comprises the costal (a) and subcostal (b) veins, united at the base, and the latter giving out two nervures (1 and 1 a) at the apex.

The lower portion consists of the median vein, from which spring, at about one-third from its apex, the supermedian nervure, 2, and the submedian nervure, 2 a, and from the middle, the central median nervure, 2 b.

4 a represents the superdorsal fold.

4 b represents the dorsal fold.

The portion marked 3, and represented by dotted lines, is the *analogue* of the apical vein of the discoidal cell in the anterior wings, and in outward appearance resembles the other veins and nervures; but it differs structurally from them, in being *solid* instead of *hollow**, and forms a kind of hinge, or ligature, to admit of the folding of the wing at that part. The reason for this departure from the usual structure is, doubtless, to prevent it from cracking or breaking, to which it would certainly be liable if it were hollow; for instance, a straw or reed cannot be bent into an angle without rupture, laterally and longitudinally, but a sinew may be.

EXPLANATION OF THE FIGURES IN PLATE III.

Family 1. TORTRICIDÆ.

Fig. 1.—a. Antenna of *Sarrothripa revayana*.

b. Maxillary palpus of ditto.

Fig. 2.—Antenna ♂, anterior and posterior wings of *Amphisa Gerningianna*; also a highly magnified portion of the antenna.

Fig. 3.—Maxillary palpus, anterior and posterior wings of *Penthina Salicella*.

Fig. 4.—Maxillary palpus, anterior and posterior wings of *Tortrix viridana*.

Family 2. PLICATÆ.

Fig. 5.—Maxillary palpus, anterior and posterior wings of *Loxotania fulvana* ♀.

Fig. 6.—Antenna ♂, maxillary palpus, anterior and posterior wings of *Ditula angustiorana*.

Fig. 7.—See description to Plate IV.

Fig. 8.—Anterior and posterior wings of *Halonota scutulana*.

Family 3. ANCHYLOPERIDÆ.

Fig. 9.—Anterior and posterior wings of *Spilonota neglectana*.

Antenna and maxillary palpus of *Spilonota dealbana*.

Fig. 10.—Antenna and maxillary palpus of *Anchylopera Mitterbacheriana*.

Anterior and posterior wings of *Anchylopera derasana*.

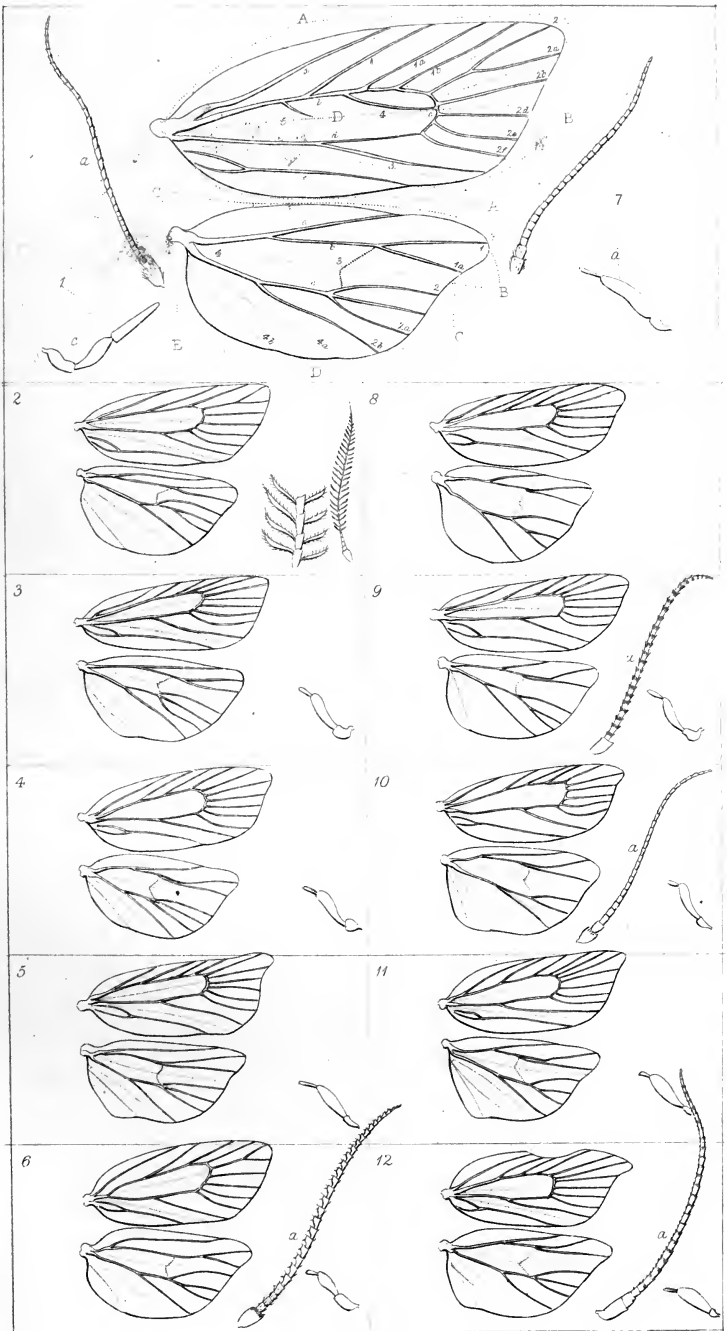
Family 4. PERONEIDÆ.

Fig. 11.—Maxillary palpus of *Oxygrapha literana*.

Anterior and posterior wings of *Peronea favillaceana*.

Fig. 12.—Antenna, maxillary palpus, anterior and posterior wings of *Teras caudana*.

* The veins and nervures are all hollow tubes, so as to admit of the passage of fluid or air through them; but their principal office is to keep the membrane of the wing extended.





EXPLANATION TO PLATE IV.

Family 5. STIGMONOTIDÆ.

- Fig. 1. Antenna, maxillary palpus, anterior and posterior wings of *Semasia Wceberana*.
Fig. 2. Maxillary palpus, anterior and posterior wings of *Ephippiphora regiana*.

Family 6. CARPOCAPSIDÆ.

- Fig. 3. Maxillary palpus, anterior and posterior wings of *Endopisa Germarana*.
Fig. 4. Maxillary palpus, anterior and posterior wings of *Carpocapsa pomonella*.
Fig. 5. Maxillary palpus, anterior and posterior wings of *Grapholita Ulicetana*.

Family 7. CNEPHASIDÆ.

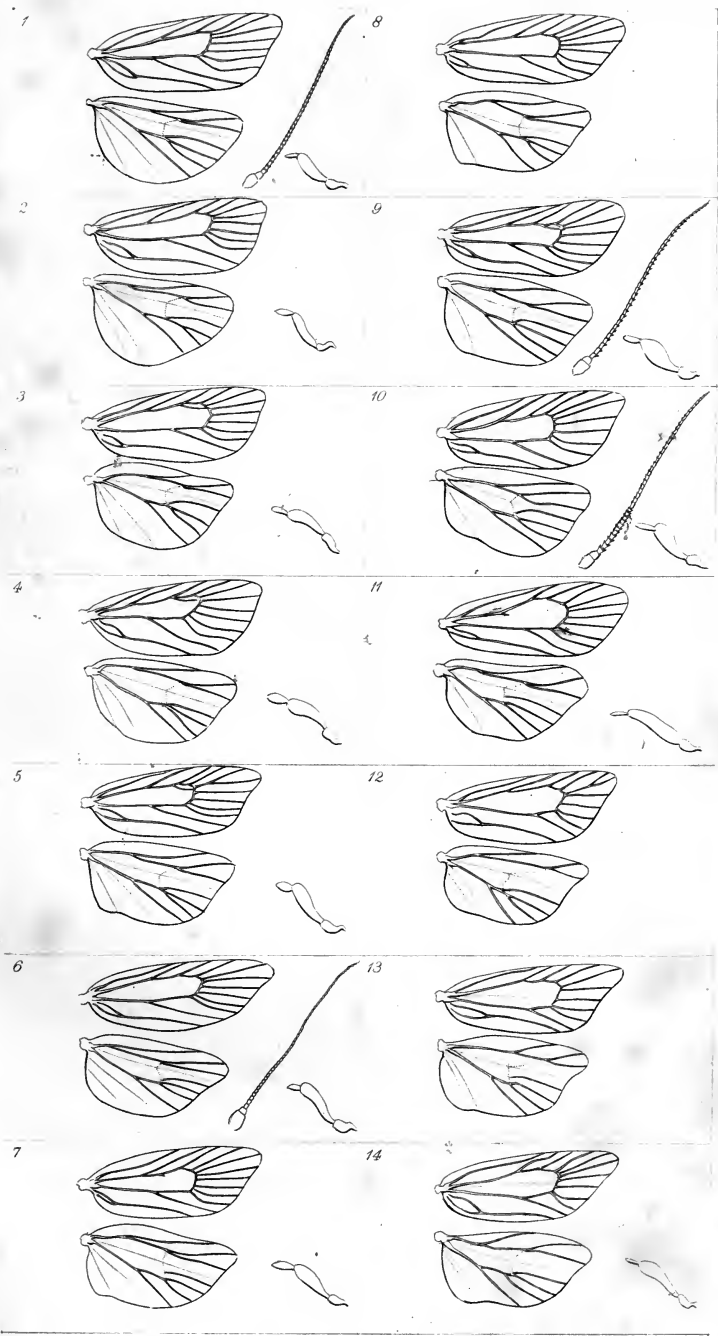
- Fig. 6. Antenna, maxillary palpus, anterior and posterior wings of *Sphaleroptera ictericana*.
Fig. 7. Maxillary palpus, anterior and posterior wings of *Cnephasia subjectana*.
Fig. 8. Anterior and posterior wings of *Ablabia pratana*.

Family 8. SERICORIDÆ.

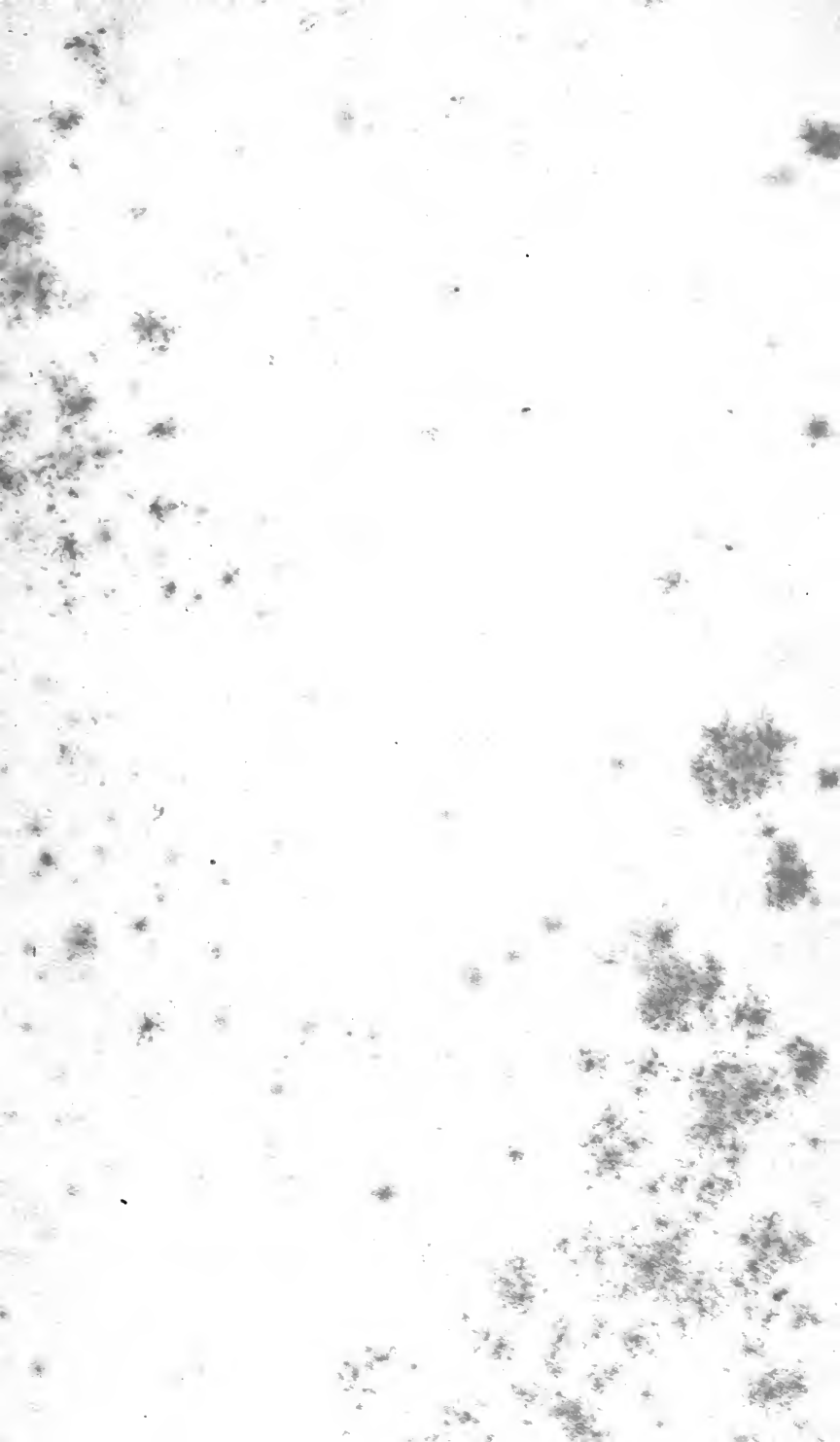
- Fig. 9. Antenna, maxillary palpus, anterior and posterior wings of *Euchromia fulvipunctana*.
Fig. 10. Antenna, maxillary palpus, anterior and posterior wings of *Sericoris conchana*.

Family 9. LOZOPERIDÆ.

- Fig. 11. Maxillary palpus, anterior and posterior wings of *Phtheochroa rugosana*.
Fig. 7. of Plate III. represents the antenna and maxillary palpus of ditto.
Fig. 12. Anterior and posterior wings of *Eupœcilia roseana*.
Fig. 13. Anterior and posterior wings of *Lozopera Smeathmanniana*.
Fig. 14. Maxillary palpus, anterior and posterior wings of *Argyridia dipoltella*.







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